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Aviation Heritage*

# FLYPAST

## Swordfish



Navy Wings **EXCLUSIVE INTERVIEW**



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Handley Page Halifax



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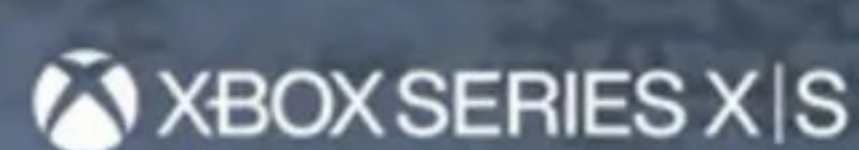
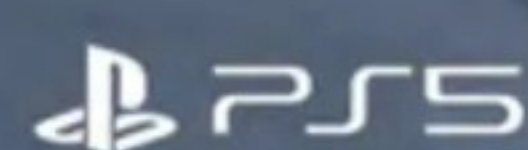
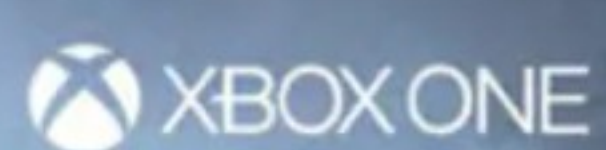
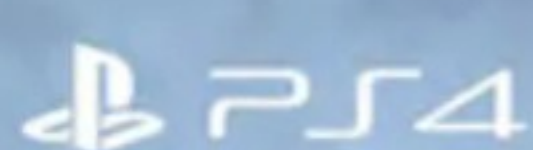
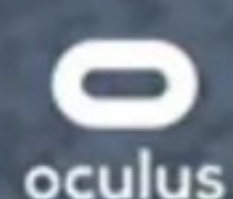
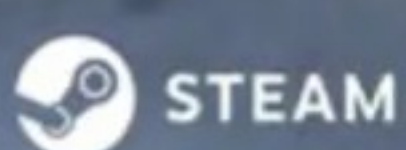
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Swordfish crews took part in some of the most famous and heroic actions of the war, often at great cost in terms of men and machines Harry Measures



## None braver

**T**he aircraft featured in *FlyPast* are frequently accompanied by stories of human courage, and those within this edition are no exception. I have long considered Fairey Swordfish crews – flying into battle in what were essentially obsolete biplanes – as being among the bravest of the brave. There's no greater example than those who took part in the heroic but ultimately doomed Channel Dash in 1942. Their task and ultimate suffering were akin to an aerial Charge of the Light Brigade.

Of course, there were many other daring battles undertaken by 'Stringbag' crews that deserve to be remembered. With that in mind, I am delighted that Steve Beebee's exclusive interview with the Navy Wings team, supported by Darren Harber's photography, provides some great news about the surviving examples' future prospects. See page 8.

I am also grateful to have 303 Squadron researcher and author Richard King's analysis of the legendary Polish unit's exploits during the Battle of Britain. Were 303's pilots undisciplined but ultimately successful as is often claimed? Find out on page 42.

This month's *Classics* focuses on one of the largely unsung heroes of Bomber

Command, the Handley Page Halifax. It was a troubled airframe in its early configuration, but evolved into a capable fighting machine. Within our 22-page 'Halibag' tribute, starting on page 50, you will find 'polar opposite' stories. First, that of 51 Squadron's disastrous losses during Bomber Command's costliest night of the war, the infamous Nuremberg raid, followed by the history of the most successful Halifax of them all, the celebrated *Friday the 13th*.

Leaping forward a generation, memories of Britain's last entirely home-produced bomber, the Blackburn Buccaneer, are stirred by Graham Pitchfork's recollection of the type's exceptional performance in the 1970s Red Flag exercises. The Buccaneers' low-level capabilities in experienced hands shocked their 'defending' US hosts and created a reputation for the 'Brick' (or 'Banana jet', if you prefer) that persists to this day. Graham also provides the concluding part of his study of Fighter Command's battles over occupied Europe, this time focusing on smashing the German defences in preparation for D-Day.

Finally, don't miss *Full Circle*, Tom Turnill's wonderful story about his 'fall and rise' as a former Cranwell cadet pilot. It is a lively tale of near misses and second chances when flying jets in the 1950s and 1960s.



Editor

**Tom Allett**

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Navy Wings' Yeovilton-based Fairey Swordfish Mk.I W5856 airborne in 2023. See page 8 Darren Harbar

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Swordfish

The Fairey biplane is a true World War Two legend. Steve Beebee speaks to Navy Wings about W5856, its remarkable Mk.I survivor

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Handley Page Halifax

**FLYPAST CLASSICS** Halifax unit 51 Squadron underwent a nightmare over Nuremberg in March 1944. Andrew Thomas relates the story of Bomber Command's worst night







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Blackburn Buccaneer S.2B XX900 has been returned to the 1977 camouflage scheme it wore while serving with 208 Squadron on overseas deployment

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From the Editor  
**Tom Allett**

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# FLASH OF THE SWORD



**RIGHT:**  
Swordfish  
W5856 on  
the grass at  
Old Warden  
in August  
2023. Note  
its prominent  
'torpedo'



e got through the  
entire display  
season without  
missing a slot.  
Thankfully,

people are now aware that the  
Swordfish is back in the sky and  
its appearances have gone down  
a storm with airshow visitors."

Jim Norris is speaking with  
justifiable pride about the post-  
pandemic return to the airshow  
circuit of Fairey Swordfish



What it lacked in speed and svelte lines, it more than made up for in versatility, endurance and operational success. In fact, the Fairey Swordfish was one of Britain's most successful World War Two aircraft. **Steve Beebee** speaks to Navy Wings about W5856, its remarkable Mk.I survivor



Mk.I W5856. Formerly a key part of the now defunct Royal Navy Historic Flight (RNHF), 2023 was the first time the Flight's successor, Navy Wings, was able to put the historic biplane through a full calendar of events, as well as being its first on the CAA register. There's understandable pride at the achievement, and – given that much more is around

the corner – an equal amount of excitement.

Navy Wings is the public facing side of the Fly Navy Heritage Trust, the charitable organisation that today operates the aircraft formerly flown by the RNHF. As well as keeping W5856 sky ready, Navy Wings is perhaps a year away from returning its other Swordfish, Mk.II LS326, to the air – and there's even the tantalising prospect of seeing

a *third* machine in the air with them, more of which later.

Fittingly based at RNAS Yeovilton, home also to the superb Fleet Air Arm Museum, the dedicated Navy Wings team is devoting its energy to the classic aircraft in its bustling hangar. Jim, the organisation's chief engineer, worked on Sea Harriers and Lynx during his Fleet Air Arm (FAA) days, ending his military career at Yeovilton

**ABOVE:**  
Airborne over Bedfordshire – the evocative sight of a 'live' Fairey Swordfish  
All Darren Harbar unless noted



**RIGHT:** Fairey Swordfish Mk.I W5856 is currently the world's only flying example



**RIGHT:** A dramatic over water view of the Navy Wings Swordfish



in 2009. Now, supported by deputy chief engineer Bruce Ellis who is currently focusing his considerable energy and experience on LS326, and other skilled personnel, the focus is on getting W5856 ready for another busy season – along with several other projects that will also interest *FlyPast* readers.

### Reaping the rewards

At the time of our visit in late October, W5856's Bristol Pegasus powerplant had been sent to Retro Track And Air, based in Dursley, Gloucestershire, for a 100-hour inspection. The team isn't anticipating any issues with the unit, one of three Pegasus engines it has in hand.

"One of the first things I did when I took up this post in 2020 was to take stock of what we had," Jim recalls. "I identified the engines as needing attention. The units fitted to the aircraft during their tenure with the RNHF were fine, but there

hadn't been so much investment in spares. Should there be a problem, it's good to have the necessary items 'on the shelf' to keep the aeroplanes airworthy. Now we do have that depth of sustainability.

"There are a handful of companies that can work on the engines, and we've opted to work with Retro Track And Air which has its own in-house design capability. They did a lot of work on that engine [from W5856], its design and manufacture, and it seems sensible to return it to them at the close of the flying season to check all's well."

The aircraft began 2023 by coming through a 'minor' service at Yeovilton. With the engine inhibited while not flying, the work included X-rays to check for corrosion, with lubricant applied to components where necessary. "There is a maintenance schedule that we use as a guide," explains Jim,

"but it is very much down to the individual to make judgements on where they need to focus their efforts. This allows more freedom and I believe the material condition of the aircraft has improved as a result."

The proof, as they say, is in the pudding, and for Navy Wings that turned out to be very sweet indeed – a full and uninterrupted airshow season for the venerable biplane. "It was very important to us that we honoured our commitments to airshow organisers," says Jim. "We've flown around 70 hours last year [2023] on W5856. We can be flexible in how much we fly but obviously we do keep a careful track of it. Nominally, we fly 50 hours a year in the Swordfish, but we managed a bit more in 2023. It's great that we've been able to do that."

The season began with an appearance at Old Warden in Bedfordshire on May 7. Duxford, Goodwood and Church Fenton's Flying Legends were among its many other show appearances. In August it





was briefly based at Old Warden, and it was during this time that most of the images on these pages were taken. With pilot Lt Cdr Glenn Allison – who recently passed 8,000 career flying hours while in the Swordfish cockpit – at the controls, the aircraft is pictured as it prepared to transit over to the Clacton Air Show on August 24.

“Glenn is a serving naval officer,” says Jim, “and we’ve got a few others who are still serving – when they’re with us they are volunteer pilots; off duty if you like. Andrew ‘Mum’ Davis, our chief pilot, is planning to expand our roster of aircrew to incorporate people from other backgrounds.”

### Staying airworthy

Built in 1941, W5856 served with the Royal Canadian

Navy from 1944, and was eventually returned to the UK by Sir William Roberts for his Strathallan Collection. In 1990 British Aerospace began a full restoration to flight condition at Brough. The Swordfish returned to the air three years later and was donated to the RNHF.

After around a decade, wing spar corrosion saw it grounded again. It did not rejoin the display circuit until 2015, by which time it had acquired the colours it still sports today, representing an 820 Naval Air Squadron machine, legendary of course for its successful attack on



**LEFT:** W5856 banks to port offering a good view of its torpedo 'armament'

**“Nominally, we fly 50 hours a year in the Swordfish, but we managed a bit more in 2023. It’s great that we’ve been able to do that”**



**LEFT:** Flying over a patchwork of fields on August 24, 2023



**RIGHT:** Inside the front cockpit

the German battleship *Bismarck*.

"We've now got the makings of three aircraft, including LS326 and NF389," says Jim. "The latter was an airborne early warning variant and was a second British Aerospace restoration project back in the 1990s. It was never completed, but they did get as far as restoring the wings and the forward fuselage. When corrosion affected W5856's wings, they redirected those wings to her and that's what got her back in the air.

"At the moment we have no plans to restore NF389 but we are going to be operating two Swordfish in the near future. Our challenge is to get to the position where two aircraft are sustainable. Engines are obviously a key element of that, and we've got three of those – the one that's just gone back to Retro Track And Air, one that's just been completed by them which will go in LS326, and very shortly we will also have a spare ready. That's my top priority and we've almost got that covered."

Avoiding further issues with the wing spars is of course another priority. Jim emphasises that there is currently no cause for concern, but points out that the spars have two concentric

**BELOW:** The Swordfish awaiting the return of its Pegasus engine at Yeovilton  
KEY-Steve Beebee



**"I could probably go on for hours about the Swordfish, because it was probably more important to the country than the Spitfire in the Battle of Britain"**

loops in them which are so close together that X-rays are required to check for corrosion. This was carried out during 2023's service.

"Attention now turns to whatever else needs addressing," he adds. "The fabric on the wings for example is Irish linen and doesn't last forever. Thankfully Bruce Ellis is an expert on many

things, including this. There's also the possibility of things breaking for whatever reason during the flying season. We'd like to generate a spare set of wings – it's very early days but we're involved in a feasibility study into that alongside Retro."

### Atlantic legend

It's rare to read anything about the Fairey biplane's remarkable history without the type being described as 'obsolete' or 'slow'. While undoubtedly the product of early 1930s technology (and thus outdated by the time World War Two began) and with an undeniable lack of speed, it remains one of the most unlikely success stories in aviation history. It even outlived its supposed successor, the Fairey Albacore, and incredibly, sank a greater tonnage of Axis shipping than any other Allied aircraft during the war.

Ironically perhaps, its slowness made it a challenging target for faster aircraft to hit. The Swordfish could also approach enemy ships with relative stealth, a significant factor in its success in torpedo attacks, and could be flown on and







**LEFT:** A view rearwards from the gunner's position

off not just aircraft carriers but converted merchant vessels. What stands out above all, however, is the bravery of its crews – not merely trying to operate from ships in rolling seas, but steadfastly pressing on against such intimidating targets as the Italian fleet at Taranto, and into the near impenetrable wall of fire protecting German warships during the so-called Channel Dash. More than anything, it is the actions – and sacrifice – of these men that is the stuff of legend.

One man who needs no persuading of the type's merits is Lt Cdr John Beattie MBE. Formerly commanding officer of the RNHF, and now a staunch supporter of Navy Wings, John has flown Swordfish numerous times and has a deep respect both for the machine and the actions of those who flew them in service.

John's on his way home for the day when he is ambushed by *FlyPast*. "What do I like most about the Swordfish? It's probably the easiest plane in the world to fly," he says. "It's a lovely old thing. You must remember that 'kids' flew these back in the day – some of them may not have been completely suited to being pilots, but they were able to do it. You could transition easily enough from a Tiger Moth to a Swordfish. If anything, it's easier than flying those, actually.

"It's pleasurable to fly too, and not as cold as you might

imagine. Your left knee gets wet if it's raining due to a drip that comes off the upper wing, but nothing else. For some reason or other you mostly stay dry. Of course, it got very cold during wartime operations over the Atlantic – they sometimes had to use lifting apparatus to hoist the crews out of the cockpits because they were so damn cold they couldn't move.

"I could probably go on for hours about the Swordfish, because it was probably more important to the country than the Spitfire in the Battle of Britain."

John emphasises the significance of Swordfish 'ops' during the crucial but sometimes overlooked Battle of the Atlantic. Convoys of up to 100 ships were responsible for keeping Britain on its feet during the darkest days of

World War Two. It's impossible to exaggerate how essential the seaborne supplies of fuel, food, arms and ammunition, tanks, aircraft, and people were to the Allied war effort. The vessels were of course targeted and sometimes decimated by German submarines – but by Easter 1943 air cover of some description was available to every key convoy. It made a huge difference.

"In the nine months leading up to Easter '43 we lost 369 ships to submarine action, but in the nine months after, it was down to 62, and in 1944 we lost none at all," notes John. "The Swordfish had the handling characteristics and low speed approach that lent itself to deterring submarines. It didn't matter that they weren't sleek monoplanes – they had fuel for a good four hours and



**LEFT:** Navy Wings' chief engineer Jim Norris with the Swordfish at Yeovilton on October 26, 2023

KEY-Steve Beebee



**RIGHT:** A view of the aircraft's torpedo, removed while the Swordfish undergoes maintenance  
KEY-Steve Beebee

were extremely effective at keeping submarines under the water where they were much less dangerous. We also sank 21 submarines using Swordfish, the highest number of any Allied aircraft in the war."

### Past, present and future

It's clear that respect for the past and honouring the FAA's heritage is paramount at Navy Wings. "It's tremendously important," nods Jim. "The team I've got are particularly passionate about these aircraft and what they represent. You'd need to have a heart of steel to walk into that hangar and not feel some of that history. It just permeates through the whole place."

It's worth remembering that unlike the RAF's Battle of Britain Memorial Flight, Navy Wings isn't receiving core funding from the MOD (aside from a Royal Navy grant).

It's a charitable organisation, reliant on donations to survive – and the fact that it's thriving says much about the regard in which it is held. Jim reveals that two individuals have been exceptionally generous – one bought Navy Wings its Supermarine Seafire, Mk.XVII SX336, which is currently at Old Warden. Another person donated a sizable amount of money, spread over four years. "We're into year three of that, with one more to follow, and it's funded much of the work we're doing on the Swordfish," Jim explains. "Via other gifts and sources of income, we have enough for at least another 18 months beyond that. Much of the revenue is spent on engineering, and right now we're in the best place we've been for years."

A £400,000 donation from the Royal Naval Volunteer Reserve means that Navy Wings can have its spare Pegasus engine



**RIGHT:** Built in 1941, W5856 is a flying tribute to all those who flew and worked on the type



**RIGHT:** Shortly after take-off from Old Warden in August 2023



overhauled. "Much of it will be newly manufactured," says Jim. "The existing components aren't terrible, but the donation is enabling us to task Retro with manufacturing new parts – cylinders, valve gear, plus pistons which are being manufactured by Cosworth. The Pegasus will retain the original crankcase but much of it will be new."

Navy Wings currently has six employees within its core engineering team, and engages a range of volunteers and contractors. The core team mostly focuses on the 'live' aircraft, except for Bruce who is mainly involved in restoration work. Jim says: "We've got four restorations on the go at present. Those programmes have a beginning and an end, so I tend to use contractors on them. Volunteers are used mostly to help with logistics, because as well as the aircraft we inherited a hangar load of spares. Our volunteers are itemising what we've got, so we end up with a proper store system in place."

Other than reinstalling W5856's Pegasus engine when it returns from Dursley, the team's main



priorities are the completion of Hawker Sea Fury FB.11 VR930 and the second airworthy Swordfish, LS326. The Bristol Centaurus previously fitted to the former has now been removed, and the potent fighter should return to the air in 2024 with a more reliable Pratt & Whitney R-2800 in its place. The swap has been agreed following advice from engineers, pilots and other heritage aviation experts. LS326 is also in a very advanced state and should follow VR930 into the skies soon, perhaps as early as 2024.

“When we started to overhaul LS326, we took it right back to bare bones and treated it like a restoration project,” says Jim. “When the Sea Fury is airworthy, the emphasis will switch to LS326 – and the optimist in me sees no reason why it shouldn’t also fly in ’24.”

The Seafire, meanwhile, was acquired from Kennet Aviation’s Tim Manna in November 2021 – Kennet remains the aircraft’s continuing airworthiness management organisation. Hawker Sea Hawk FGA.6 WV908 remains a work in progress – but the end is now in sight. “I was over at RAF Leeming recently talking to Hawker Hunter Aviation about how they operate their Hunters, because we’re starting to get ourselves back into the role of operating jet aircraft,” says Jim. “The Sea Hawk has been taken as far apart as we’re going to take her, and now it’s a question of inspecting the airframe for any corrosion or cracks, while various components have gone off to different places to be repaired or overhauled. By the end of 2024 we should be starting to reassemble her with a view to getting airborne the

following year or 2026.”

Finally, and on a note that will delight Swordfish enthusiasts, among Navy Wings’ extensive associate collection is nothing less than a fourth example of the storied biplane – Mk.II HS554. The last time three Swordfish flew together was probably the 1950s, but with HS554 and LS326 both on their way to completion, the historic airshow devotee can at least begin to dream.

“That aircraft is owned by Tom Smith and is currently at White Waltham,” says Jim. “It’s on a similar timescale to LS326. Having a common interest, we talk to Tom a lot – he helps us and we help him. So, yes, we certainly have the prospect of eventually seeing *three* Swordfish in the air – what a sight that will be.

He grins. “That’s going to be a wonderful day!” ●

**“You’d need to have a heart of steel to walk into that hangar and not feel some of that history. It just permeates through the whole place”**



**LEFT:** The ‘Stringbag’ taxiing on the grass at Old Warden



## Privateer taking shape in Michigan



The Yankee Air Museum's magnificent Privateer project YAM

Staff at the Yankee Air Museum in Willow Run, Michigan, are making great progress on their restoration of Consolidated P4Y-2G Privateer 59876.

The 1945-built aircraft served the US Navy and Coast Guard before embarking on a civilian career as N6813D. Flying as a fire-bomber, the charismatic machine was retired following a 1975 accident in Alaska. Its substantial remains were donated to what is now the Yankee Air Museum in 1986.

Late last year the museum's team successfully installed the last of the Privateer's four engines and is close to completing a functional front turret. Prior to that they had corrected damage sustained to the airframe during its accident and recovery; this involved making new formers at the bottom of the port fuselage and changing the landing gear, among much else. Both Martin top turrets are now in place, with attention now turning to the front. [www.yankeeairmuseum.org](http://www.yankeeairmuseum.org)

## Halifax project receives major wing boost

A large section of a Handley Page Hastings wing has been donated by the RAF Museum to the Nanton, Alberta-based Bomber Command Museum of Canada which will use it to help rebuild a Handley Page Halifax.

The wing originally belonged to Hastings C1A TG568 which served with the RAF's Strike Command Bombing School before being struck off charge in 1974. Following months of negotiation,

the wing panel was removed from storage on December 14, and delivered to Thirsk, where a steel shipping cradle is being created for its flight to Canada.

A port outer wing panel, obtained through a deal with Yorkshire Air Museum, has already been prepared in its cradle. Both sections will be airlifted to Canada aboard a RCAF transport aircraft, and may have arrived by the time *FlyPast* is published.



The wing section is removed from storage at Cosford BCMC

## Viking completed for US carrier display



Viking 159731 on display aboard USS 'Yorktown' US Navy

The USS Yorktown Foundation has completed restoration of Lockheed S-3B Viking 159731. The Operation Desert Storm veteran is on loan from the National Museum of Naval Aviation and is now a featured exhibit aboard the *Yorktown*.

The aircraft has been returned to the colours it wore in the early 1980s with the US Navy's VS-30 'Diamond Cutters'. The work is part of Operation Restoration, a bid to refurbish all 12 aircraft on the historic carrier's flight deck. Foundation director

Meaghan Silsby said: "It's important to continue to inspire visitors and we're always looking for support for this ongoing project. Because our aircraft sit in the sea air, they are more susceptible to damage and need ongoing maintenance."



# Rare Bücker nearly ready to fly in Spain

CASA-built Bücker 1.131H D-2 EC-MCP carried out a successful taxi on January 8 at Cuatro Vientos, Madrid following a meticulous Fundación Infante de Orleans (FIO) restoration.

Built under license by CASA in the early 1940s at its factory in Puntales, Cádiz, the biplane is equipped with an original four-cylinder 105hp Hirth 504 engine. It's part

of the first series built by CASA powered by the German unit, which was later replaced by the more powerful ENMASA Tigre G-IV. Having served the Spanish Air Force as E.3B-198, its remains were acquired by an FIO member who subsequently spent many years restoring it. It has been completed in the Spanish Civil War colours of '33-26'.

**Roberto Yáñez**



CASA-built Bücker EC-MCP taxiing on January 8 Roberto Yáñez

## Buccaneer group announces fast taxi day



The Buccaneer Aviation Group will host a special event at Cotswold Airport in Gloucestershire on March 30, the highlight of which will be a Buccaneer fast taxi demonstration. The event will mark the 30th anniversary of the type being withdrawn from service in April 1994. Admission is by ticket only: [www.the-buccaneer-aviation-group.com](http://www.the-buccaneer-aviation-group.com) Photo Jake Wallace

## Remembering Robert Taylor

The finest aviation artist of our time, Robert Taylor, has passed away aged 77 following a short illness.

Robert worked with many of the great World War Two pilots to establish both accuracy and drama in his images – most of which have long been considered collector's items. The Robert Taylor Trust has now been established in conjunction with directors of the Military Gallery, his lifelong publisher.

Even though his subject matter invariably alluded to the dark days of conflict, Robert placed a sense of calm and beauty into subjects that might have appeared warlike in some hands. It was as much about the sky and the capture of light as it was about the subject aircraft. The latter are transformed when made elemental parts of skylines. There was something genuinely awe inspiring and uplifting, even spiritual, within it. Blue skies, Robert. **Steve Beebe**

## Classic Spanish airliners reach new homes

The two Boeing 707s previously preserved at Getafe, Madrid (see January issue), have now arrived at new homes. The aircraft were transported by truck to the Museo del Aire and the Rey Juan Carlos University shortly before Christmas. They're set to be reassembled and will eventually go on permanent display. The Museo del Aire's 707-351C 19164 is pictured Roberto Yáñez







Corsair D-FCOR  
arriving at its new  
home on December  
18 Stefan Schmoll

## German Corsair arrives at new home

Chance Vought F4U-5NL Corsair D-FCOR, owned for more than a decade by Bremgarten-based MaxAlpha Aviation, has been acquired by the Flying

Legends organisation (not connected to the UK airshow of similar name) at Siegerland, also in Germany. It completed the 50-minute flight to its new home

on December 18, 2023, with owner Georg Raab in the cockpit. The naval night-fighter is a Korean War combat veteran, having served with USMC

unit VMF(N)-513 in 1952. It was later used by the Argentine Navy, serving until the mid-1960s, after which it was preserved as part of a museum collection

in Buenos Aires. It was eventually brought to France and restored to flight between the years 1994 and 2000, before arriving in Germany in December 2009.

## Flying Legends not happening in 2024



Flying Legends Airshow 2024 has been cancelled The Fighter Collection-Flying Legends

The Fighter Collection (TFC) has confirmed that the famous warbird event, most recently held at Church Fenton in Yorkshire, will not take place this year. TFC's Nick Grace said in a statement: "It is with much regret that we confirm our decision to cancel the Flying Legends Airshow 2024. This decision has not been made lightly and follows an in-depth assessment of our options for the year ahead... Let me

assure you that we will not let this dampen our spirits as we explore our options for the future. We promise to keep you posted." On a happier note, a new historic-themed airshow is being launched at Sywell in Northamptonshire this summer. The event, run in association with Ultimate Warbird Flights, takes place on June 22 and 23, with several participants already confirmed. [facebook.com/Sywell2024](https://www.facebook.com/Sywell2024)

### briefings

The historic numberplate for 42 Squadron has been resurrected at RAF Lossiemouth. On September 21, 2023, it was reformed as the operational conversion unit to train aircrew and engineers for the Poseidon MRA1 and Wedgetail AEW1, both based on the Boeing 737 airframe. The new unit flew its first sortie on September 26. A Thomas via R Hayward



The second episode of BBC2's *Digging For Britain* series focused on excavation work at RAF Alconbury in Cambridgeshire, which has unearthed a treasure trove of Roman artifacts. Archaeologists uncovered new layers of history at the base that served both the RAF and USAAF during World War Two. The episode can be viewed in full on the BBC's iPlayer.



# Photo-reconnaissance aircraft in the Duxford spotlight

IWM Duxford's newest exhibition showcases World War Two aerial reconnaissance with special emphasis on camera-fitted variants of the Spitfire.

*Spies In The Skies*, which is open until February 25 and free to all museum visitors, features four airworthy Spitfires – FR.XIV MV293, PR.XIs PL983 and PL965, and Mk.I N3200, the latter to illustrate the differences between photo-recce

'Spits' and 'standard' models.

The exhibition, the third of Duxford's winter spotlight events, also features a full-size replica representing PR.VII R7059. The latter is painted in a distinctive hue of pink, illustrating the schemes sometimes used to camouflage aircraft flying sunrise or sunset sorties. They're set to be joined by PR.IV AA810, the subject of an exciting return to

flight project. Also on show is Fighter Aviation Engineering's Lockheed 12A Electra Junior G-AFTL and the Aircraft Restoration Company's Westland Lysander Mk.IIIa V9312.

"Not everyone immediately thinks of the Spitfire as an aircraft able to carry cameras," said Visitor Experience and Project Manager Liam Shaw. "This means we can shine some light on



The eye-catching full-size replica of R7059 Both KEY-Jamie Ewan

the story and also spark conversations as to why some of them were painted

blue and some pink." Look out for more on the exhibition in next month's *FlyPast*.



'Spies In The Skies' is now open at Duxford

On December 6, noted US warbird pilot R T Dickson announced that his soon-to-fly North American F-86 Sabre will be finished in the colours of F-86E 51-2834/FU-834 *Patricia II*. The latter was the mount of Capt Joseph Romack while serving with the Kimpo, Korea-based 336th Fighter Squadron 'The Rocketeers' in 1954. Via USAF



John Monaghan, 98, has been honoured with a special 'Thank You Liberator Medal' for his participation in the humanitarian Operation Manna. John flew as radio operator aboard 166 Squadron Avro Lancasters during the 1945 campaign to drop food to Dutch citizens. The veteran received the award on December 13 at Woodford's Avro Heritage Museum.



## Work begins on classic propliner

The Speke Aviation Group's Hawker Siddeley HS748 G-BEJD was lifted on to purpose-built stands on December 13 to facilitate restoration work.

The classic airliner, the only one of its type preserved in the UK, is based at the former Liverpool Speke Airport. Work will now continue on both the internal and

external appearance of the aircraft, which is likely to be painted in the livery of its last operator, Liverpool-based Emerald Airways. The new stands, built by HMS Engineering, have been financed by Danny Coughlin's Hereford-based Support Air.

HS748 G-BEJD has been raised on to special stands at Speke Gerry Manning



## Avro Shackleton emerges from restoration



Shackleton WR977 following recent restoration work Howard Heeley

After four months of work at Newark Air Museum, scaffolding has been removed from the forward section of the Nottinghamshire attraction's Avro Shackleton, WR977.

The installation had been in place to allow teams to undertake significant restoration and repainting

work, including the replacement and re-sealing of the main cockpit glazing, in-depth cleaning and lichen removal from the upper fuselage, and re-sealing of the upper escape hatch.

While work was in progress, the team looking after the 'Shack' managed to

keep its cockpit open to visitors – contributions from which have gone towards scaffold hire and materials. Attention will soon turn to the remainder of the airframe – a scheme designed to raise the aircraft nosewheels with the help of refurbished jacks is being evaluated.

**Howard Heeley**

## Well-travelled F-16 on show in Thailand

Lockheed Martin F-16B 87-0404 has been transferred to the Don Mueang-based Royal Thai Air Force (RTAF) Museum in Bangkok, Thailand.

The aircraft has no engine or ejection seats and is wearing incomplete markings, but it is being refurbished to the Thai attraction's usual high standards. It's one of seven aircraft donated by the Republic of Singapore Air Force (RSAF) to the RTAF in

exchange for the use of training facilities at Udon Thani. Before that it had been used to train RSAF pilots in the US with 311 Squadron at Luke AFB.

In Thai hands it flew with 103 Squadron of Wing 1 at Nakhon Ratchasima. It retains the unit's lightning and tiger symbols, but is also adorned with markings applied in 2012 to celebrate Thailand's centenary of military aviation. **Jos Schoofs**



F-16B 87404 at Don Mueang on December 7 Jos Schoofs



# Mirage pair delivered to university



The Mirage pair shortly after delivery in December Roberto Yáñez

Until recently in storage at Cuatro Vientos, Madrid, two former Spanish Air Force Ala 14 Dassault Mirage F-1BE/CEs have been moved to

the campus of Rey Juan Carlos University at Fuenlabrada, around 10 miles to the south.

Both aircraft will be displayed close to

Hangar Laboratorio V, which is managed by aeronautical education company Aviation Group. The same organisation has acquired various

other retired civil and military aircraft over the last few years, including ex-Spanish Army CASA/Bolkow 105 and some Bell

UH-1H helicopters. It has also been allocated former Spanish Air Force 45 Grupo Boeing 707 (see January issue).  
**Roberto Yáñez**

## Newark Harvard gradually taking shape



Nose cowlings have been refitted to Harvard 42-12417  
Howard Heeley

The long-term restoration of North American Harvard IIB 42-12417 is continuing to make steady progress at Newark Air Museum.

At the time *FlyPast* went to press, personnel were preparing to refit the restored nose cowlings to the fuselage. The trainer's previous owners had

modified its cowlings, fixtures and fittings, which presented some challenges for the Newark team. The aircraft, which flew with the Royal Netherlands Air Force as B-163 and the RCAF as FE930 is likely to be fully reassembled later this year.

**Howard Heeley**

## Experimental glider restored in Argentina

The Argentinian Museo Nacional de Aeronáutica (MNA) has opened a new room dedicated to the work of German engineer Dr Reimar Horten.

The attraction's central exhibit is the restored Horten Ho Xb 'Piernífero', a project undertaken by volunteer group

GTRA. The wooden construction of the glider required special care, as many of its panels had suffered water or sun damage. To preserve the original material while removing previous coats of lacquer, the team had to carefully grind the surfaces down using sandpaper. Since

'Piernífero' was never actually completed, the team opted to leave it without a fabric covering.

"Our goal was to preserve the aircraft, since it is 95% complete except for some missing or broken parts," said project leader Marcelo Baldelli. **Ramiro Piacenza**



Dr Reimar Horten's restored Ho Xb is now on display GTRA via Ramiro Piacenza



## Buffalo revealed at museum in Canada

The Canada Aviation and Space Museum (CASM) in Ottawa has placed its latest exhibit on display – former RCAF CC-115 Buffalo ‘452’.

One of 15 examples of the recently retired de Havilland Canada-built utility transport/search and rescue aircraft, ‘452’ was flown from its former base at Comox, British Columbia, to Trenton in Ontario on March 15, 2022. It was then disassembled for transport by road to its new home in Ottawa, where it arrived in October

2023. Having made the type’s last operational flight on January 15, 2022, while assigned to 442 Squadron, ‘452’ is now on display in the museum’s Reserve Hangar.

CASM boss Chris Kitzan said: “It’s a great honour to welcome this significant aircraft to our offerings at the museum. The Buffalo is a key addition to our RCAF and de Havilland collections. It will help us share stories of the evolution of the RCAF and its workforce, as well as about de Havilland’s role.”



Buffalo ‘452’ pictured shortly before departing for its new home CASM

## Line-up announced for D-Day Squadron tour



The Commemorative Air Force’s ‘Ready 4 Duty’ is among those taking part Via D-Day Squadron

In a repeat of its 2019 mission, the D-Day Squadron will be bringing multiple Douglas C-47 and DC-3s to Europe in 2024 to mark the 80th anniversary of D-Day and 75 years since the Berlin Airlift.

The US-based flight is expected to depart Oxford-Waterbury, Connecticut on May 18 and will head across the Atlantic following the original ‘Blue Spruce’ route. It’s hoped the flight will be joined by at least three

European C-47s hailing from Sweden, Finland and France.

Aircraft currently confirmed: C-47 *Placid Lassie* (N74589), C-47 *That’s All, Brother* (N47TB), C-47 *Screaming Eagle* (N150D), R4D *Ready 4 Duty* (N151ZE), C-53 *Spirit of Benovia* (N8336C), C-41A *Hap-Penstance* (N341A), DC-3 *Chalair* (F-AZOX, France), C-47 *Night Fright* (N308SF, UK), C-47 *Drag ‘em Oot* (N473DC, UK), and C-47 *Pegasus* (G-ANAF, UK).

## Draken centre stage at Swedish exhibition



A Saab J 35J Draken is the mainstay of a new exhibition at the Swedish Air Force Museum. The display at the Linköping attraction focuses on the Cold War, highlighting aircraft that served in the decades prior to the air force’s current Gripen-equipped era. It opened to the public in October 2023 Lennart Berns

### briefings

Dassault Falcon 20ECM TM.11-3/472-03 has been moved into a shelter at Spain’s Torrejón air base where the retired electronic countermeasure jet is likely to be used by a technical school. It’s one of two Falcons once used by the Spanish Air & Space Force from 1994 to 2020. The other example, TM.11-4/472-04 is with the Museo del Aire. Roberto Yáñez



In November 2023, the wreck of a Lockheed P-38 Lightning was found off Italy’s east coast in the Gulf of Manfredonia. Discovered by divers in 12m of water, records suggest that it is P-38G 42-13042, which disappeared on August 25, 1943, while being flown by 2nd Lt Warren Singer – a pilot with the 82nd Fighter Group’s 96th Fighter Squadron.





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# THE SHEPHERD

## ON SCREEN

**M**any *FlyPast* readers will surely know *The Shepherd*, a famous ghostly aviation and Christmas-themed tale from the pen of highly successful author Frederick Forsyth. His original 1970s novella has been reprinted several times (and just re-released again) and has also become something of traditional festive fare on radio channels. In December the story moved to the small screen thanks to the Disney+ streaming channel and the enthusiastic backing of Hollywood A-lister and

pilot John Travolta, who appears onscreen and also served as executive producer.

Shot at the former RAF West Raynham, it's technically a 'short' at just 39 minutes, although its basic storyline remains unchanged from the book. A relatively inexperienced pilot (played by Ben Radcliffe), making what should have been a straightforward night-flight across the North Sea on Christmas Eve in 1957, gradually finds himself in increasing danger. His de Havilland Vampire suffers technical failures and then encounters rapidly

deteriorating weather as fuel runs low. Just when all seems lost, a mysterious airman (played by Travolta) appears in a Mosquito to shepherd him towards safety. Without wishing to produce any spoilers for newcomers to the story, this adaptation does introduce an additional spectre who doesn't appear in either the book or radio play. That might be tricky for some traditionalists to accept, but it did not spoil my enjoyment, despite being a long-time fan of Forsyth's original work.

I watched *The Shepherd* with the whole family and it must be said that



**ABOVE:** Ignore the unfortunate boom artwork; the movie is worth 39 minutes of your time Disney+

**BELOW:** Ben Radcliffe as Freddie Hooke in the Disney+ Original Short film *The Shepherd* Disney-Sean Gleason



the younger adults found it less entertaining than the grown-ups. Aviation buffs should put aside their thoughts about how and when servicepeople would salute, whether it depicted the right mark of jet and some technical aspects of night-flying – just enjoy the entertainment. In *The Shepherd*, the atmosphere created is much more important than the technicalities.

Radcliffe delivers a fine representation of the claustrophobic and lonely feeling that can develop when anyone feels trapped in increasingly worrying circumstances. If you can accept there's a ghost aeroplane in the story, you needn't worry about the smaller details. For me, the only real disappointment worth mentioning is that this short ended so soon.

**Tom Allett**



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STAR LETTER

Running in the family

What a pleasure it was to see my father, test pilot Roly Falk, on the front cover of the December 2023 issue of *FlyPast*. My thanks to you and please pass on my thanks to Ken Ellis for the article.

It was also nice to see that my grandfather, Bill Thorn, was mentioned – and pictured – in another of that month’s articles, *Four of the Best*, by Tony Buttler, in the section about Harry ‘Sam’ Brown. He also features in Ken Ellis’ book *Testing to the Limits: Volume 2*. My thanks go to Tony as well. Not bad to have one’s family featured twice in one issue!

In August 2022, the team at Southend looking after Avro Vulcan XL426 arranged for me to recreate the famous photo of my father – the original was used in the article by Ken. Incidentally, my other grandfather, Oswald ‘Foxy’ Falk, through his merchant bank OT Falk and Partners, funded Frank Whittle’s Power Jets in the 1930s developing the jet engine.

John Falk  
Via email

John Falk (right) recreates the famous photo of his test pilot father Roly at Southend VRT/ Andy Lockwood-Jibz TV



Our Spanish Air Force ‘tour’

In the summer of 1959, I flew with my friend Michael Marshall from Cambridge to Tit Mellil, Casablanca, in an Auster J-1-N (G-AIGM).

Our range with a reserve belly tank was 200 miles and our cruise speed was 80 knots. The journey took us seven days, and we were non-radio - communication being by red and hopefully green flares from the airfields at

which we needed to land. Having crossed the Channel from Lympne, we were late leaving Beauvais and arrived at Nevers in the dark, which we found thanks to our out-of-date Air Touring Guide which told us that it was just by a bend in the Loire river, which we could just make out. The field had closed, and we landed among running sheep, which can just about run at the speed of a landing Auster!

The staff were in a hangar having a booze-up, which we then joined. In crossing Spain, we landed at several Spanish Air Force bases, as well as a USAF nuclear bomber base at Zaragoza, where we were temporarily arrested before being royally entertained. At the Spanish bases there were numerous aircraft movements, with types including Heinkel He 111s and Me 109s (Hispanos), both with

Merlin engines, and Junkers Ju 52s. Crossing the Pyrenees was an adventure, going around the western end of the mountains. Later on, Gibraltar refused us, so we went on to Tangier with no customs clearance, our fuel load being just adequate. The necessary Spanish stamps were hauled out of a secret drawer by Tangier immigration, who kept such things for emergencies. Due for its 50-hour

check at Casablanca, a USAF Master Sergeant said nothing would persuade him to fly in our ‘crate’! He had listened to the tired Cyrus Bombardier engine and punched the canvas to test its strength, the resulting ‘pocket’ staying with us until we landed back at Cambridge. It had certainly been a memorable experience!

Neale Edwards  
Chard, Somerset



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## Aussie One-Elevens

Further to the article about the BAC One-Eleven (December 2023 issue), the Royal Australian Air Force's 34 Squadron also had two – A12-124/125 – it used as VIP transports. They were based at RAAF Fairburn in Canberra, Victoria, from 1968 to 1990.

I was based at RAAF

East Sale in the mid-1980s, and as it is only about 220 miles from Canberra, a 34 Squadron One-Eleven would sometimes do a touch-and-go at East Sale. The main runway there is parallel to the flightline, so activity on the latter would come to a halt as the One-Eleven came in,

with dozens of pairs of eyes watching to see if the pilot would apply power and take-off (as he invariably did) or brake at the end of the runway and taxi in. The latter would mean we had a visit from a VIP!

**Peter 'Olly' Olsson  
Burton upon Trent,  
Staffordshire**

## Special formation

I'd like to express my thanks to the organisers of Duxford's Battle of Britain Airshow, the B-17 Preservation Society and the BBMF for giving us the spectacle of B-17 *Sally*

B flying in formation with the Lancaster on September 16-17. I've attended airshows throughout my adult life and seen those two classics many times but never in formation. I

understand this last happened 28 years ago. I did not see it then and I doubt I ever will again.

**Mick Britton  
Rotherham, South  
Yorkshire**

## Tempestuous!

What a moment it must have been to see a Hawker Tempest lift off into British skies for the first time in so many years! It is rare indeed for something like this to happen, especially so many decades after the type was used in anger.

The article in *FlyPast* (January 2024 issue) made it clear that the return to flight of this important machine has been a long and drawn out process involving many groups and individuals over a significant period

of time. I wish to congratulate all those who were involved in this magnificent achievement.

My appreciation goes to all of them and to *FlyPast* for bringing the story to light in such a timely and interesting manner. I imagine it will still be a while before we can hope to see the Tempest at airshows, because it naturally has to undergo a series of flight tests, but what a sight and sound that will be.

**Matthew Rhead  
Coventry,  
Warwickshire**

## Credit where it's due

I wanted to respond to Christopher Miskimon's excellent article on the F-4 Phantom's combat experience in Vietnam (November issue).

When I wrote *The Tonkin Gulf Yacht Club: Naval Aviation in the Vietnam War* and *Going Downtown: The US Air Force over Vietnam, Laos and Cambodia 1961-75*, three of the US Navy 'MiG-killers' I interviewed put me in touch with Dr Nguyen Sy Hung, historian of the Vietnamese People's Air Force and author of *Historic Confrontations in the Skies of Vietnam*. I got an early English translation for use in my books; although it's now published in English and available from the Vietnamese government.

All the US combat veterans I interviewed who had read the book told me that the Vietnamese accounts of the incidents they engaged in were far more accurate than US sources. The VPAF records confirm all five victories by Steve Ritchie, but only three of Randy Cunningham's claims. When I interviewed Matt Connelly of VF-91, he told me his 'back-seater' was told by Cunningham's RIO Willie Driscoll that they had actually been shot down by the pilot of the MiG-17 they claimed as a third victory. The VPAF's records show that the third combat involved a new VPAF pilot flying one of his



A US Navy F-4B Phantom of VF-154 drops bombs over Vietnam in February 1968 USN

first missions, not an experienced pilot. Christopher's *FlyPast* article mentions that the VPAF claims more F-4s were shot down than the US admits were lost in air combat. In fact, the VPAF claims over

60 Phantoms shot down. Given that US loss figures involve 'creative accounting', the VPAF figures are likely correct. When it comes to American combat records of Korea and Vietnam, the advice I received

as a young sailor from an old Navy chief is still the best: "Believe nothing that you hear and only half of what you see!"

**Thomas McKelvey  
Cleaver  
Via email**



## Off the deck

www.grubstreet.co.uk  
FLYING WITH THE NAVY,  
Steve & Heather Bond,  
HBK, ILLUS, 156PP, £28

All reviews by  
Andrew Thomas  
unless noted



This pictorial book is a welcome spin-off from the author's *Fleet Air Arm Boys* series. Produced in landscape format on good quality paper, it presents the reader with a history of British naval aviation from 1912 to the present. The photo selection enables the reader to enjoy the development of naval aircraft, although coverage of the RNAS during World War One is surprisingly minimal. Later years are better covered and, as with the *Boys* series, post-

war coverage occupies the greater part, with some interesting and good quality material dealing with everything from carrier decks to aircraft cockpits. The one major criticism is the author's occasional use of colourised images, which detracts from the authenticity. It's nevertheless a lovely book that would make a splendid gift for a favourite uncle – perhaps together with a bottle of Navy rum!

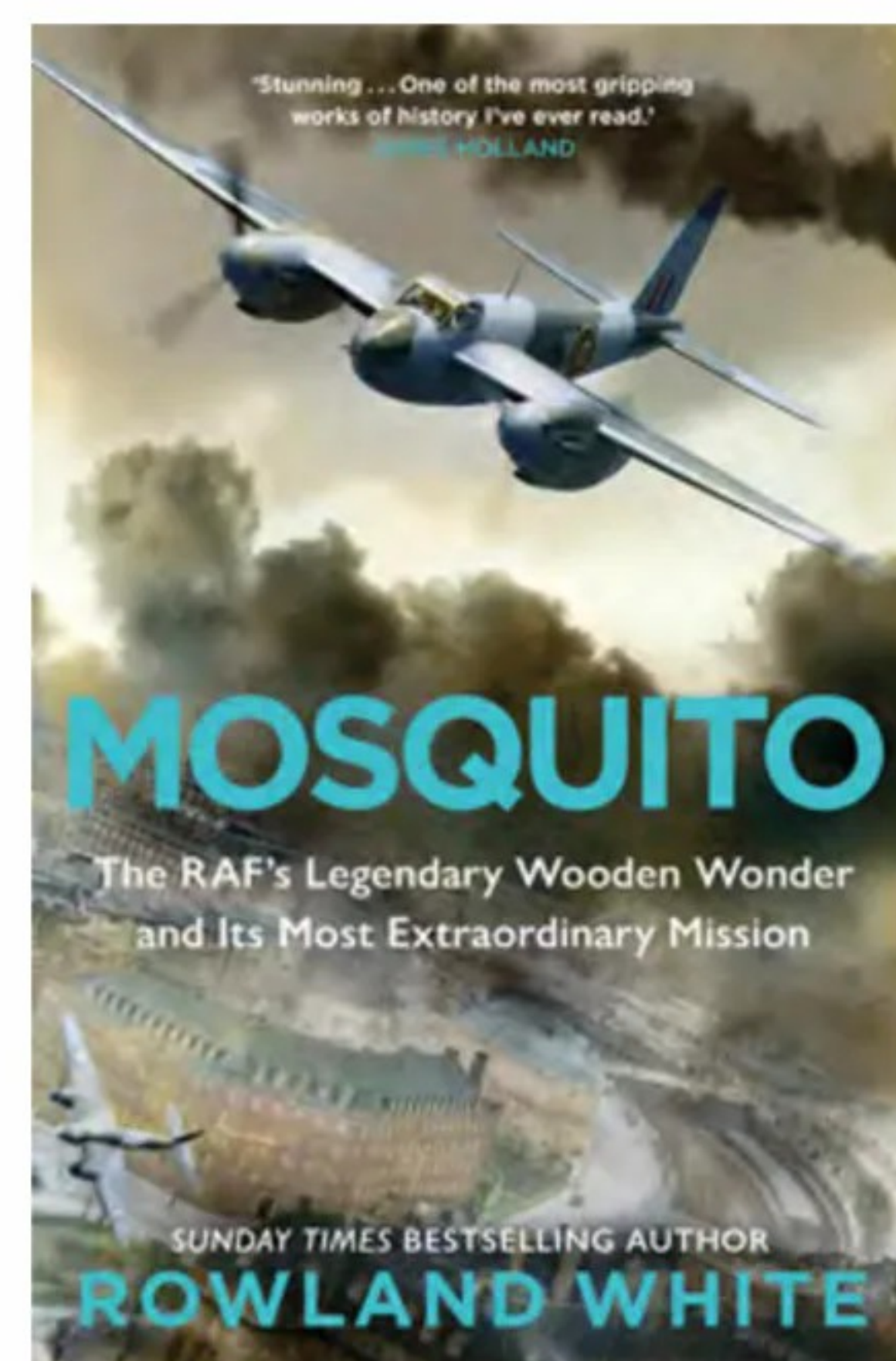
## Stuff of legend

www.penguin.co.uk  
MOSQUITO, Rowland White  
HBK, ILLUS, 536PP, £20

Believe the plaudits – *Mosquito* is a wonderful tome and very much the type of page-turner you'd associate with a writer of White's calibre. The author is already well known to the aviation publishing world through such commended works as *Vulcan 607* and *Storm Front*, but this 2023 offering is his best to date.

What this book is *not* is a definitive history of de Havilland's 'wooden wonder'. Instead it focuses on Winston Churchill's top secret Special Operations Executive and its scarcely credible bid to destroy the Gestapo HQ in Copenhagen.

It's in this context that the remarkable *Mosquito* comes



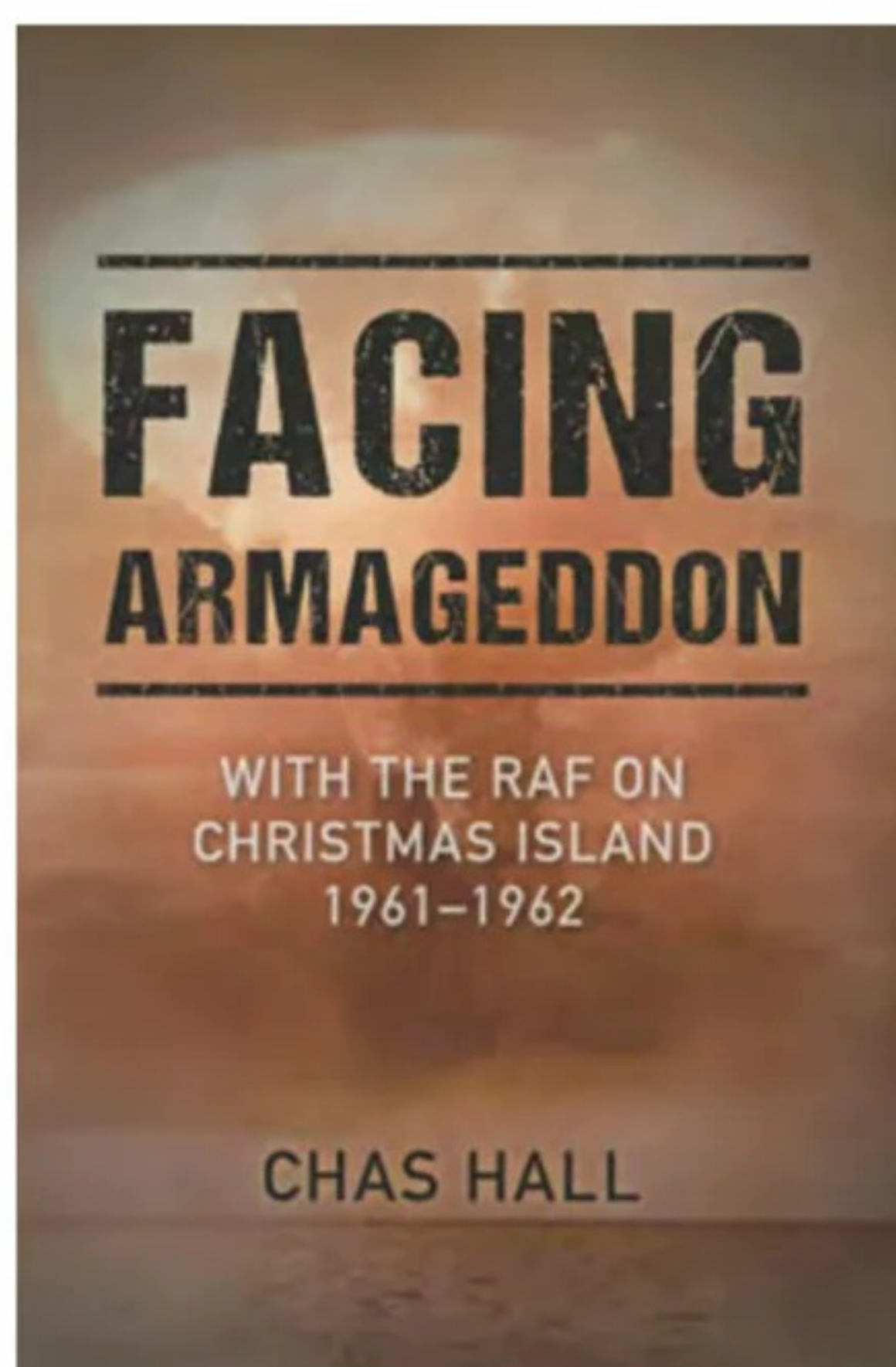
into its own – flying as spy plane, night-fighter and daring low-level bomber, the 'Mossie' is as much the hero of this story as the many real life, human legends remembered within its pages. An addictive, moving and tenaciously researched tale, White has done their legacy proud.

**Steve Beebee**

## Nuclear testing

www.grubstreet.co.uk  
FACING ARMAGEDDON: WITH THE  
RAF ON CHRISTMAS ISLAND,  
Chas Hall, HBK, ILLUS, 208PP, £20

This interesting and highly personal narrative is a combination of social and military history. One of the key elements of British defence policy during the mid-20th century was the development of an independent nuclear capability. Over the same period, a major fact of life for young British men was a period of two years' compulsory National Service. Author Chas Hall experienced the tail end of both, with much of his service spent on Christmas Island supporting nuclear tests. Hall was present for the later and less well-known



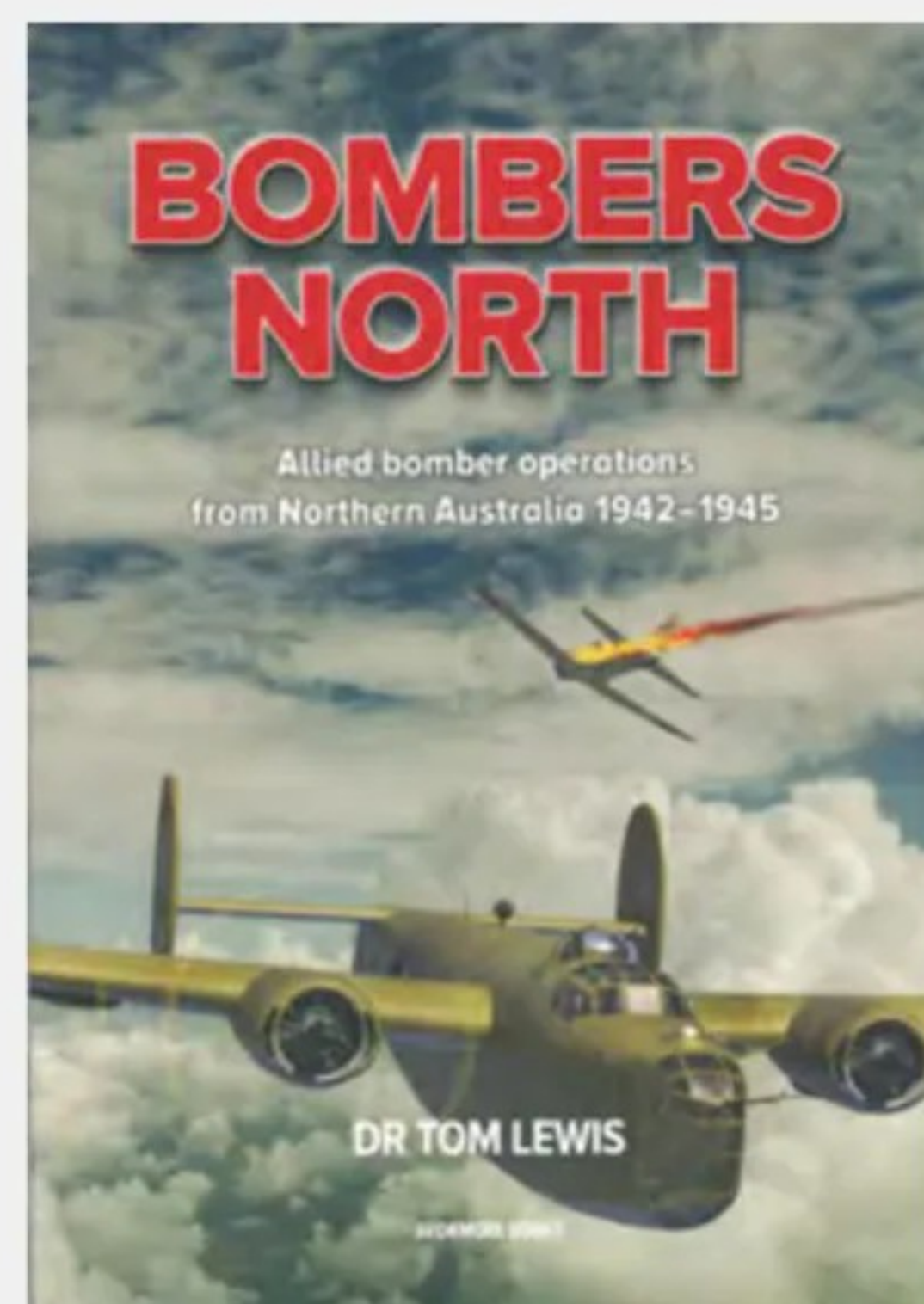
1960s trials, an aspect that makes his book all the more informative.

He highlights the relative privations encountered and controversy surrounding subsequent health issues suffered by many nuclear test veterans. This is a worthy addition to a little-known aspect of British military history.

## Pacific bombers

www.avonmorebooks.com.au  
BOMBERS NORTH, Dr Tom Lewis  
SBK, ILLUS, 156PP, £60

The latest offering from Avonmore on the air war in the Pacific is this very welcome coverage of Allied bomber operations from northern Australia. Just to reach targets on Timor or New Guinea, crews had to fly immense distances, and such raids were often hotly opposed by the Japanese. If downed into the sea, there was little prospect of rescue. The author outlines the technical capabilities of the main types involved on both sides before moving on to the development of the Allied bomber offensive. The actions of the US and Australian



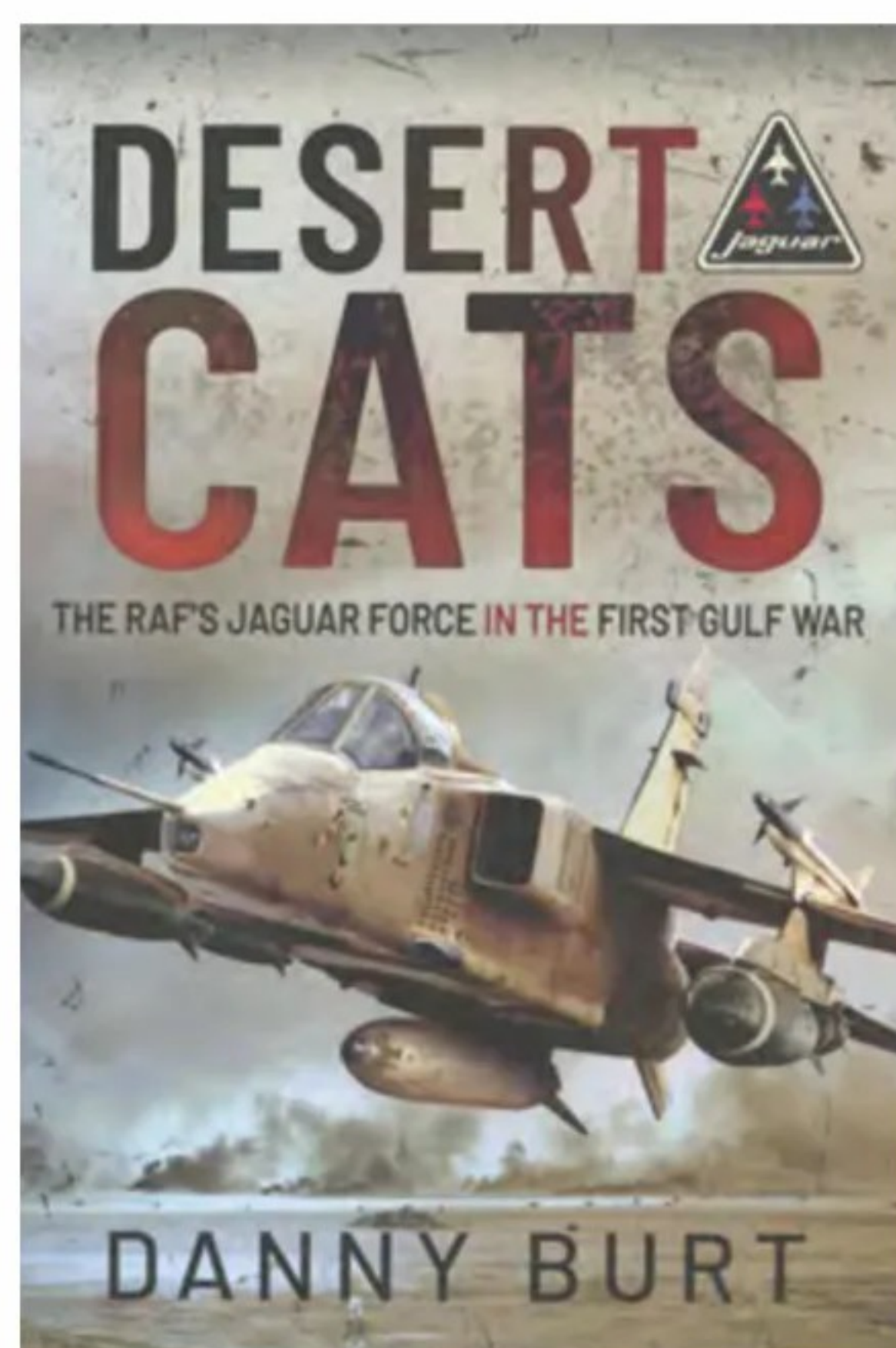
units are well described as is the evolution of the RAAF heavy bomber force. Much of this will be new to the reader as will the bombing and mining attacks by Australian Catalinas along the coast of mainland China. Well written and informative, it's an important addition to the history of the Pacific air war.



## Jaguars at war

www.penandswordbooks.com  
DESERT CATS, Danny Burt,  
HBK, ILLUS, 216PP, £30

Of the RAF fast jets employed during the 1991 Gulf War, the bulk of published material thus far has covered the Tornado. *Desert Cats* is a welcome change, profiling the Jaguar's role in the conflict. After an overview of Operation Granby and a description of systems upgrades, the author presents a diary-style account of the action. The bulk of the book comprises personal memories of the trials and triumphs of flying a single-seat fast jet in such an intense operational environment. Much is relatively mundane: "Checked in with AWACS, picture clean...", interspersed with high-



octane bursts of action: "Missile! I think it was a handheld missile. I flared, broke left and I remember thinking, I am not turning very fast!" The author also presents a dozen useful appendices detailing sorties flown by individual pilots and citations for gallantry awards. Well worth the cover price.

## Jump jets in action

www.ospreypublishing.com  
HARRIER GR.7 & 9 UNITS IN COMBAT, Michael Napier,  
SBK, ILLUS, 96PP, £16.99

The latest offering in this highly informative series covers the later combat career of one of the most iconic of British jets. Using sound research and well-chosen personal stories, it takes the reader through a seemingly endless series of conflicts and smaller operations.

The GR.7 made its combat debut in Bosnia in 1995 and returned to action during the lengthy Kosovo campaign four years later. In the intervening time, the Harrier squadrons had participated in the aerial policing of Iraq and also

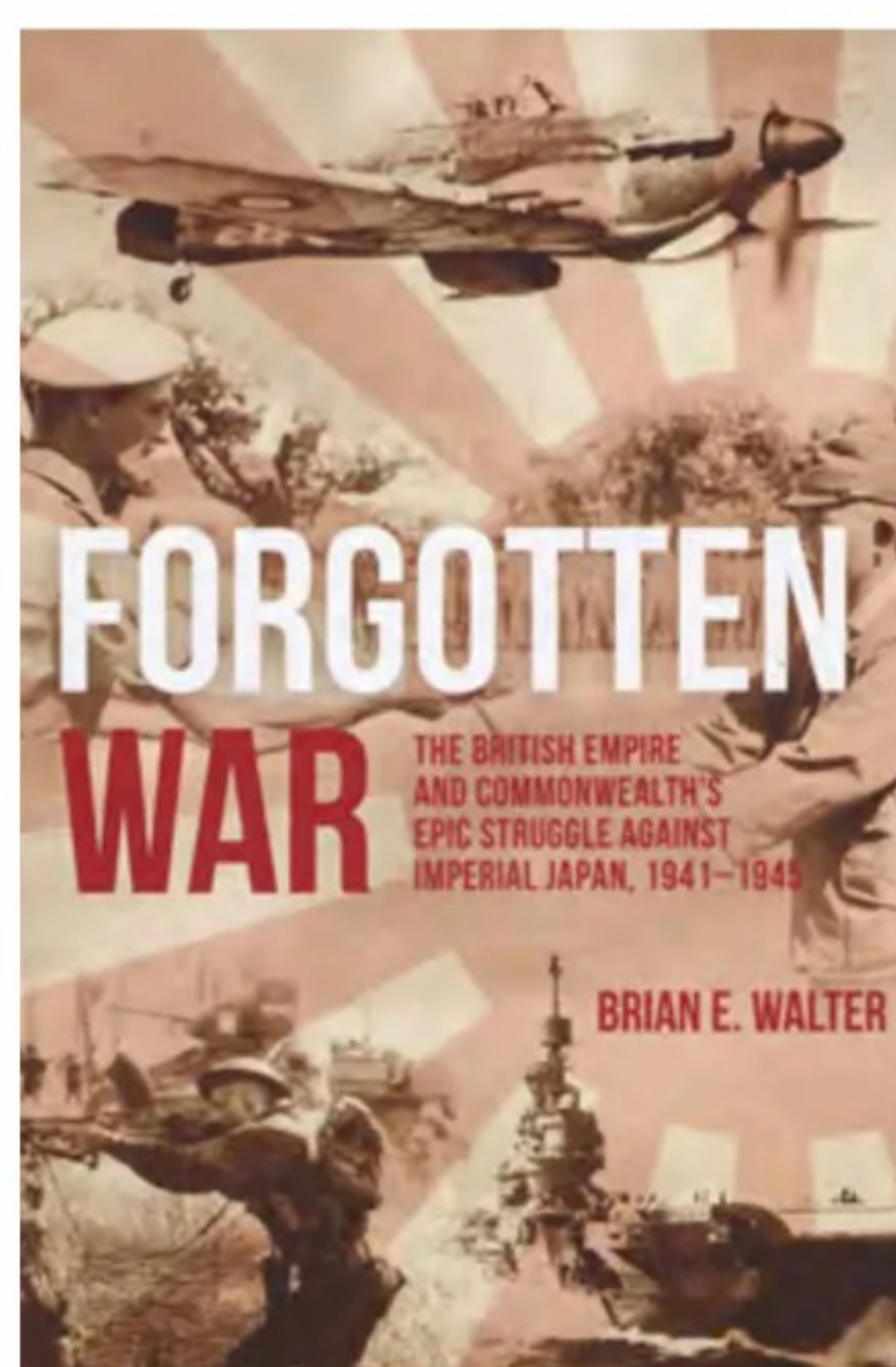


Joint Force Harrier in the Sierra Leone campaign. The aircraft saw extensive action during the 2003 war in Iraq and later flew in support of British operations over Afghanistan, prior to premature withdrawal in 2010. This is a well written account supported by excellent images from both official and private sources.

## Far East fracas

www.casematepublishers.com  
THE FORGOTTEN WAR,  
Brian E Walter, HBK, ILLUS,  
314PP, £25

Addressing troops after taking command of South East Asia Command in 1943, Admiral Louis Mountbatten said of the XIVth Army: "You are not forgotten, it's just that no-one has heard of you." That statement was probably true in that, for most people, the existential wartime struggle was taking place in Europe and, to a lesser extent, North Africa. Over 250 pages of narrative, Brian E Walter seeks to correct that oversight, presenting a detailed account of the British and Commonwealth contribution to the Pacific Theatre, outlining the

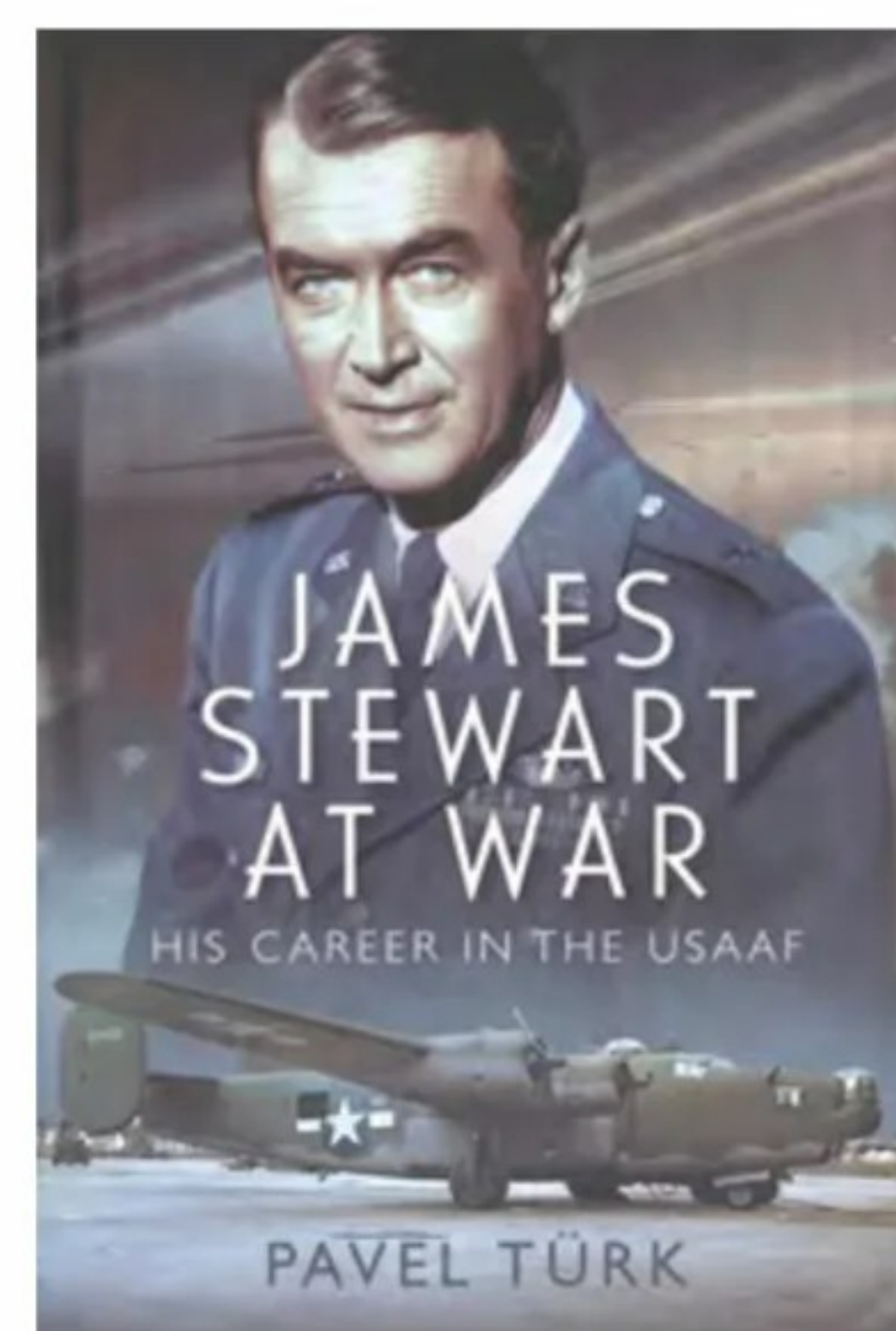


initial Japanese offensives and subsequent activity in areas such as the South Pacific, Indian Ocean, India and Burma. The narrative is supported by five helpful appendices, including a list of Victoria Crosses won. A must-have book in itself, it also offers an excellent starting point for further investigation.

## Actor to hero

www.pen-and-sword.co.uk  
JAMES STEWART AT WAR –  
HIS USAAF CAREER, Pavel Turk,  
HBK, ILLUS, 112PP, £20

By the time war broke out in 1939, 'Jimmy' Stewart was an established Hollywood film star. In 1941, aged 33, he enlisted in the USAAC. Already a licenced commercial pilot, he was initially employed on training duties and making recruitment films. Anxious not to exploit his celebrity status, he agitated for a combat assignment and, in November 1943, joined a B-24 Liberator unit in the UK, later being promoted to deputy commander of the 2nd Bombardment Wing. He was no mere



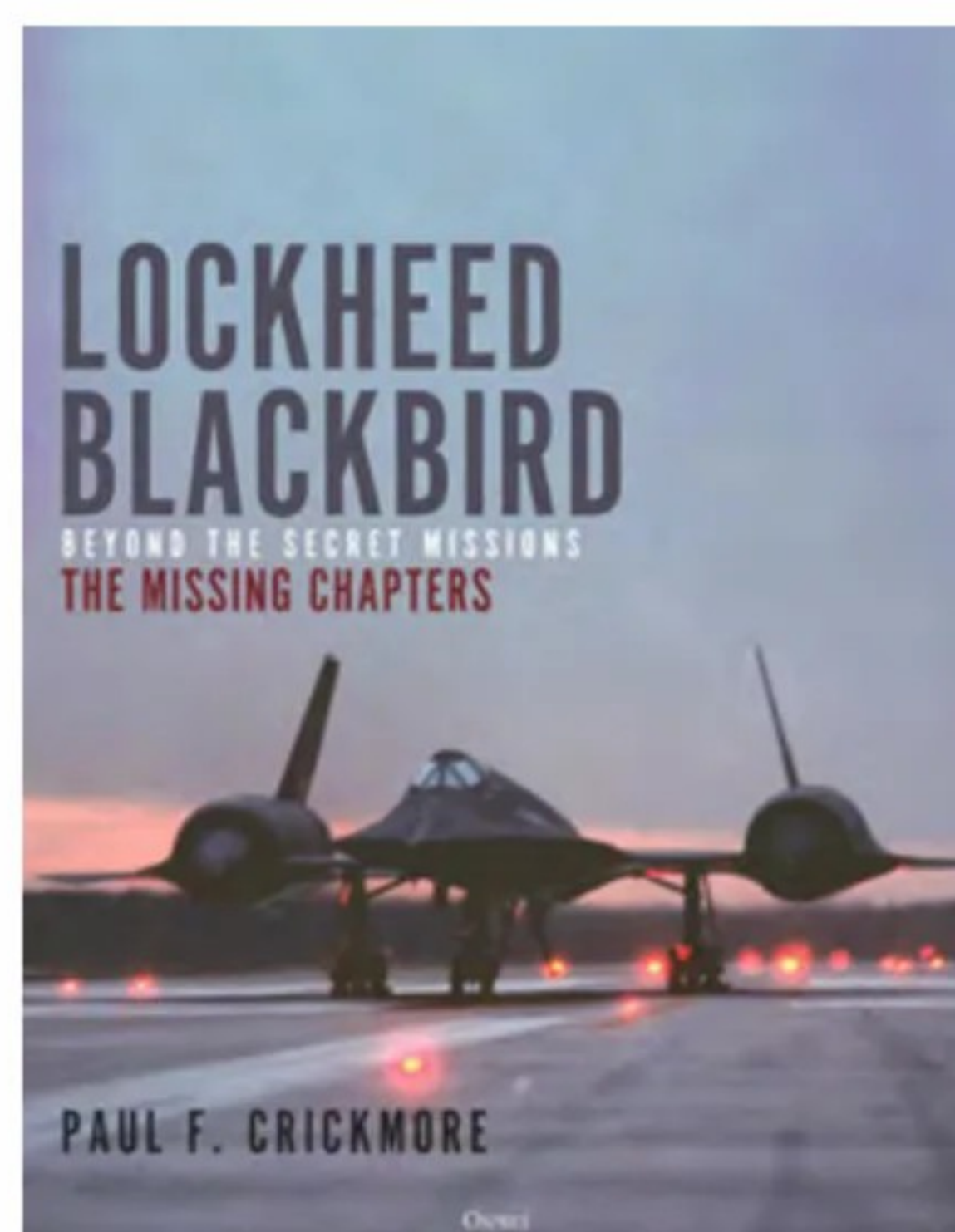
staff officer and, as this delightful book reveals, regularly flew on daylight bombing sorties into the heart of the Third Reich, being decorated several times. Post-war, he returned to his glittering movie career and spoke little of his wartime achievements, but this highly readable account puts the record straight.



## Cold War icon

www.ospreypublishing.com  
 LOCKHEED BLACKBIRD –  
 THE MISSING CHAPTERS,  
 Paul F Crickmore,  
 Hbk, ILLUS, 528PP, £60

A true Cold War icon, the Lockheed SR-71 has a particular fascination due to both its unique design and performance, as well as the nature of its missions. The author is a subject expert and this well produced book is based on years of research, enhanced by recently declassified papers. It's illustrated throughout with a vast number of relevant images and tells as complete a story of this remarkable aircraft as is possible in a single volume. The initial requirement and subsequent development is covered in detail, aided



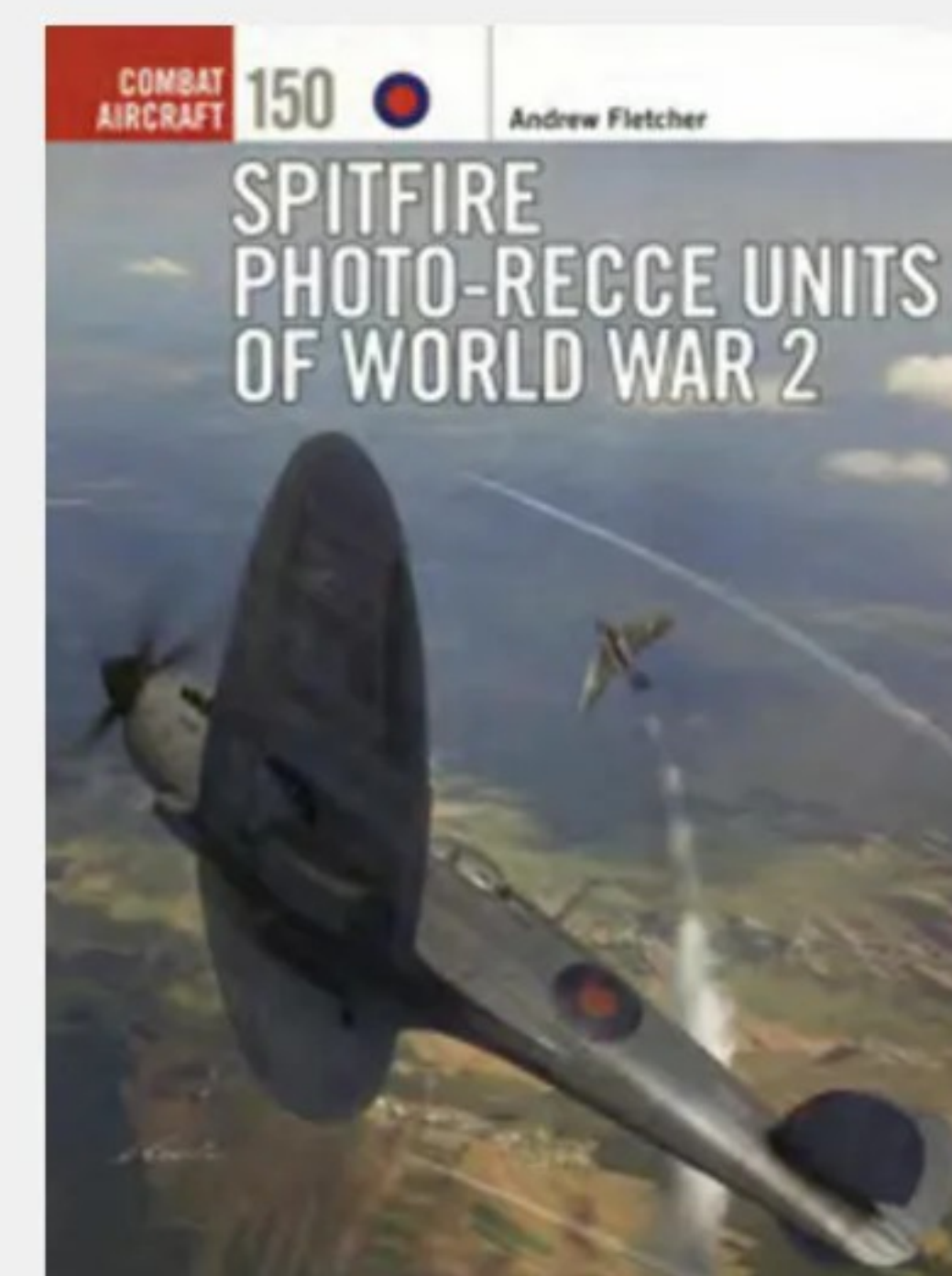
by many helpful tables and diagrams. The type's fielding in the strategic reconnaissance role inspires some fascinating accounts, including astonishing operational detail and aircrew insights. The level of co-ordination with other intelligence gathering platforms is also highlighted. This is a big book in all respects and comes with a hefty price tag, but it's a worthy investment.

## Eye in the sky

www.ospreypublishing.com  
 SPITFIRE PHOTO-RECCE UNITS  
 OF WW2, Andrew Fletcher,  
 SBK, ILLUS, 96PP, £16.99

This welcome title focuses on the important, but less well-known photo-recce role of the Spitfire in wartime. The excellent photographs are complemented by 22 colour profiles that cover all marks and theatres. The well written text manoeuvres the reader through the wartime service of the Spitfire recce units.

That of 212 Squadron in France during 1940 has seldom been covered in detail and is well described here, as is that of the embryonic PDU and later PRU. Accounts



of long-range sorties into Burma over vast tracts of jungle are particularly interesting, as are the operations of the Spitfires transferred to the USAAF in support of the daylight bombing offensive – there's even mention of Soviet activities for the type. It represents excellent value for a narrative of a vital, if less publicised role for the iconic fighter.

## Pacific air battles

www.casematepublishing.co.uk  
 SOLOMONS AIR WAR VOL 1,  
 M Claringbould and P Ingman,  
 Hbk, ILLUS, 248pp, £35

The latest offering from these respected authors is well up to their usual standard and describes the early air actions of the Battle of Guadalcanal in the Solomon Islands, a flashpoint that became one of the Pacific's pivotal campaigns. It begins with the US landings on Guadalcanal and Tulagi that caught the Japanese completely off guard, beginning a long and bloody battle with initial air cover provided by US Navy carrier-based aviation. This was later complemented by land-



based aircraft of the USMC and USAAF to counter the enemy's response. The authors brilliantly capture the campaign's intensity, and the book is noteworthy in that it includes contributions from the Japanese perspective. The first in a major series of books, it's well worth the £35 price.

## Atlantic adversaries

www.ospreypublishing.com  
 SUNDERLAND VS U-BOAT: BAY OF  
 BISCAY 1943-44, Mark Lardas,  
 SBK, ILLUS, 80PP, £15.99

This volume records history through the lens of two opponents, in this case an aircraft and submarine.

The Sunderland's major foes were the German U-boats that posed such a threat to Atlantic convoys, with the key battleground being the Bay of Biscay, across which the submarines had to transit from their French bases.

The author propels the reader through the technical aspects of both aircraft and U-boat, highlighting the strengths and weaknesses of each, before examining the strategic situation in the



Atlantic. Anti-submarine warfare was a deadly game of cat and mouse with many supporting players, a complex subject that's well described here, helped by easily understood tables, diagrams and maps. An interesting read, it's a good starting point for anyone interested in the maritime struggle during World War Two.



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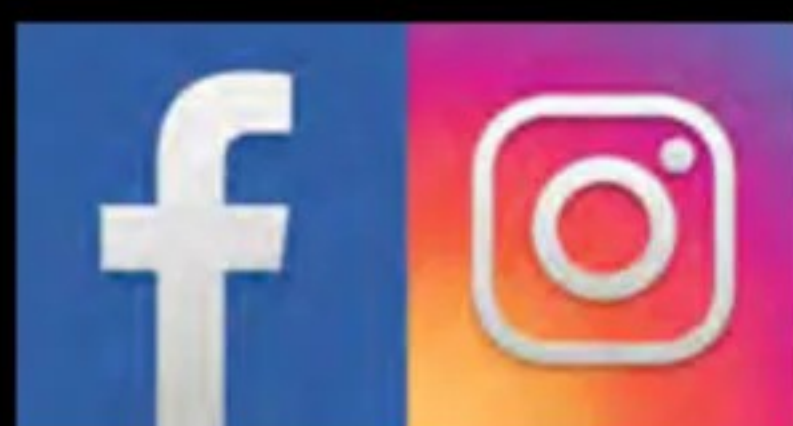


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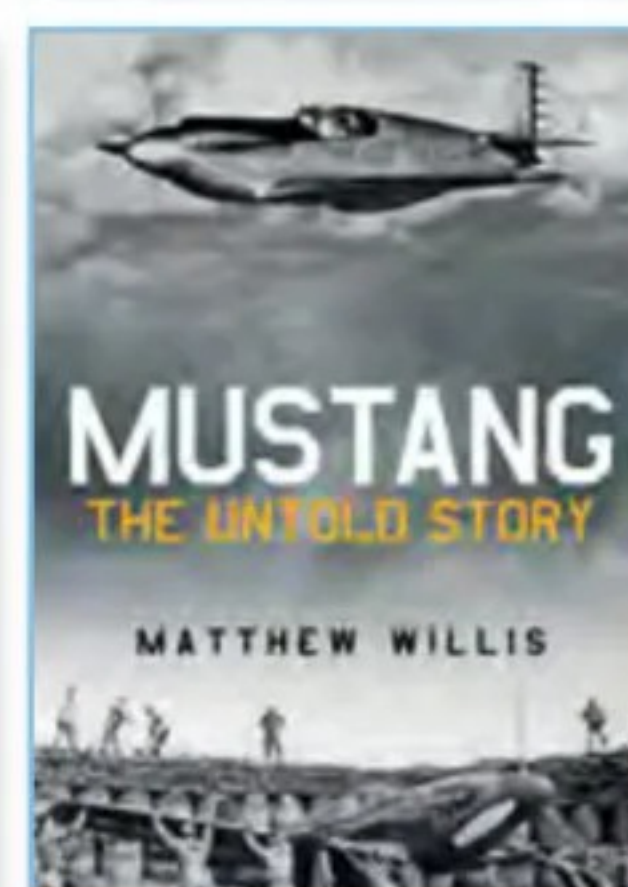
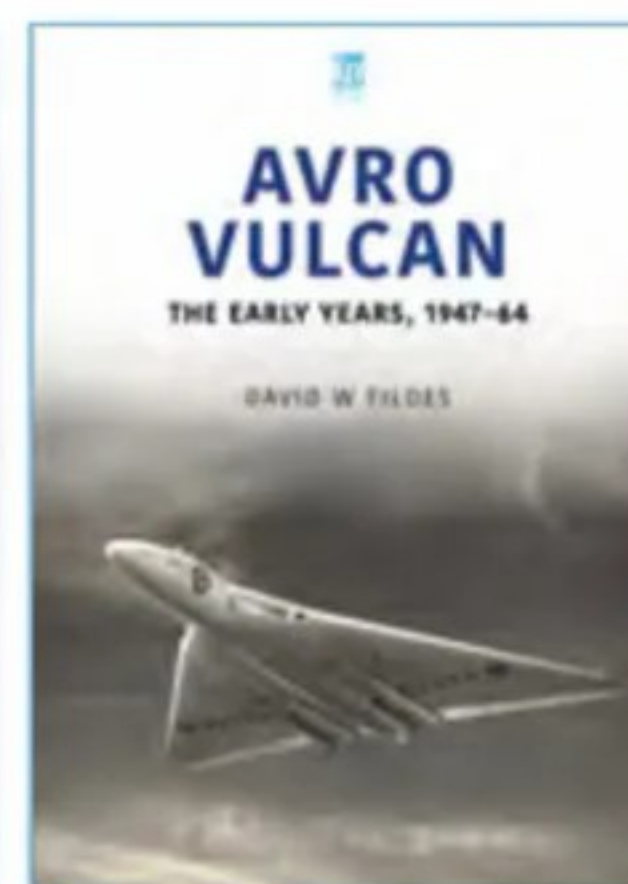
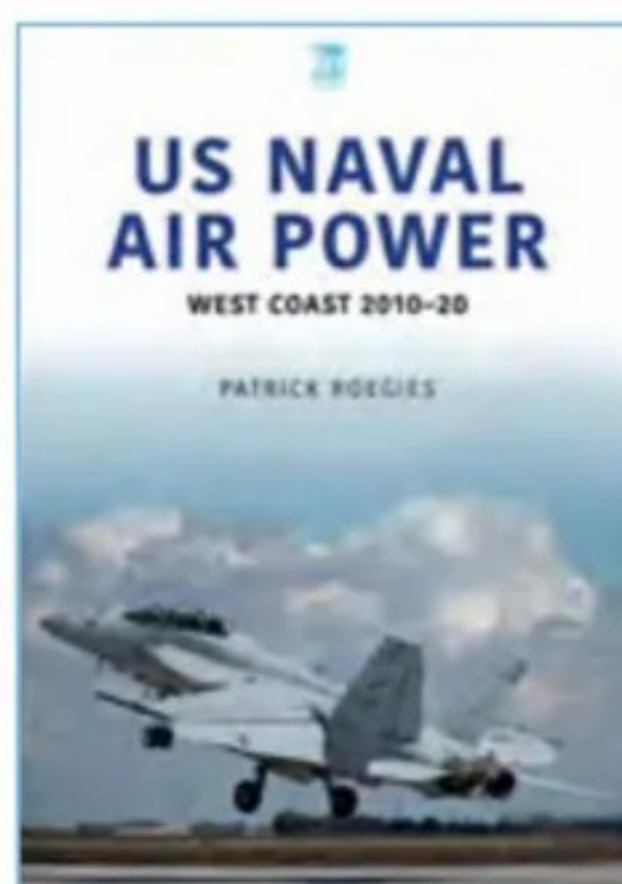
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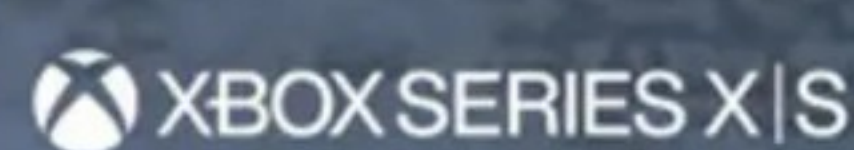
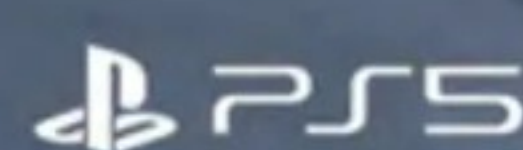
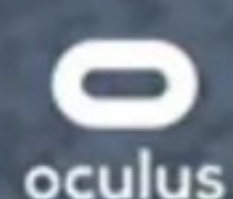
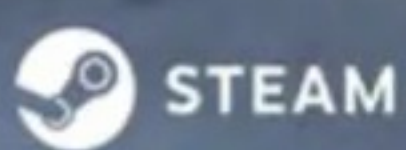
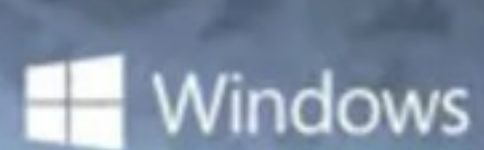
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RIGHT:

Aged 30, Roe with two of his winning models at Alexandra Palace, London, April 1907.

This image is believed to have been taken by Samuel Franklin Cody KEC



# out of the Arches

**Ken Ellis** tracks down the unlikely scene of a British aviation pioneer's triumph

**T**om adopted the long-suffering look that comes to every editor sooner or later: "You want to write about some *railway* arches?"

Well, not exactly, but I did want to tick off something that had long been on my 'bucket list': the place where Britain's aviation

industry really took off – an area of marshes and arches.

There are in fact three venues in this 'trip', all within or close to London. There's a chronological agenda, but with a fair distance – and a lot of traffic – between them, they are perhaps best consigned to the "as and when I'm in the area" category.

Edwin Alliott Verdon Roe

was born in Patricroft, west of Manchester, in 1877. He preferred Alliott to Edwin and was known to his friends as 'A V'. Apprenticed in a locomotive works, later employment as a fitter in a boat yard led to studying marine engineering and then a life at sea from 1899 to 1902.

Early experiences were varied, including work in Canada's 'outback' in the 1890s. He crossed the Atlantic again in 1906 to take up a short-lived post in the US as draughtsman to visionary G L O 'Geordie' Davidson. Patented in 1896 and referred to as the 'Gyropter', Davidson was developing a huge steam-powered airliner that featured lift 'rotors' embedded in the wings. Roe had parted from this ambitious but doomed venture by the end of 1906.

Roe had been building model gliders since 1901. At a competition staged at Alexandra





Palace in north London in April 1907 he won the considerable sum of £75 for his rubber-powered Wright-like biplanes that outflew the opposition. If that sum of money doesn't sound like winning the lottery, it's a 'fiver' more than the average annual salary of 1908. Samuel Franklin Cody attended the model contest: at Farnborough on October 16, 1908 the American-born showman became the first person to carry out a sustained powered flight in Britain.

### Finishing straight

The prize money allowed Roe to make the leap from model to man-size. A month after the contest he was hard at work on a biplane in a workshop in West Hill, Putney, southwest London. A plaque commemorating this was unveiled in October 2011.

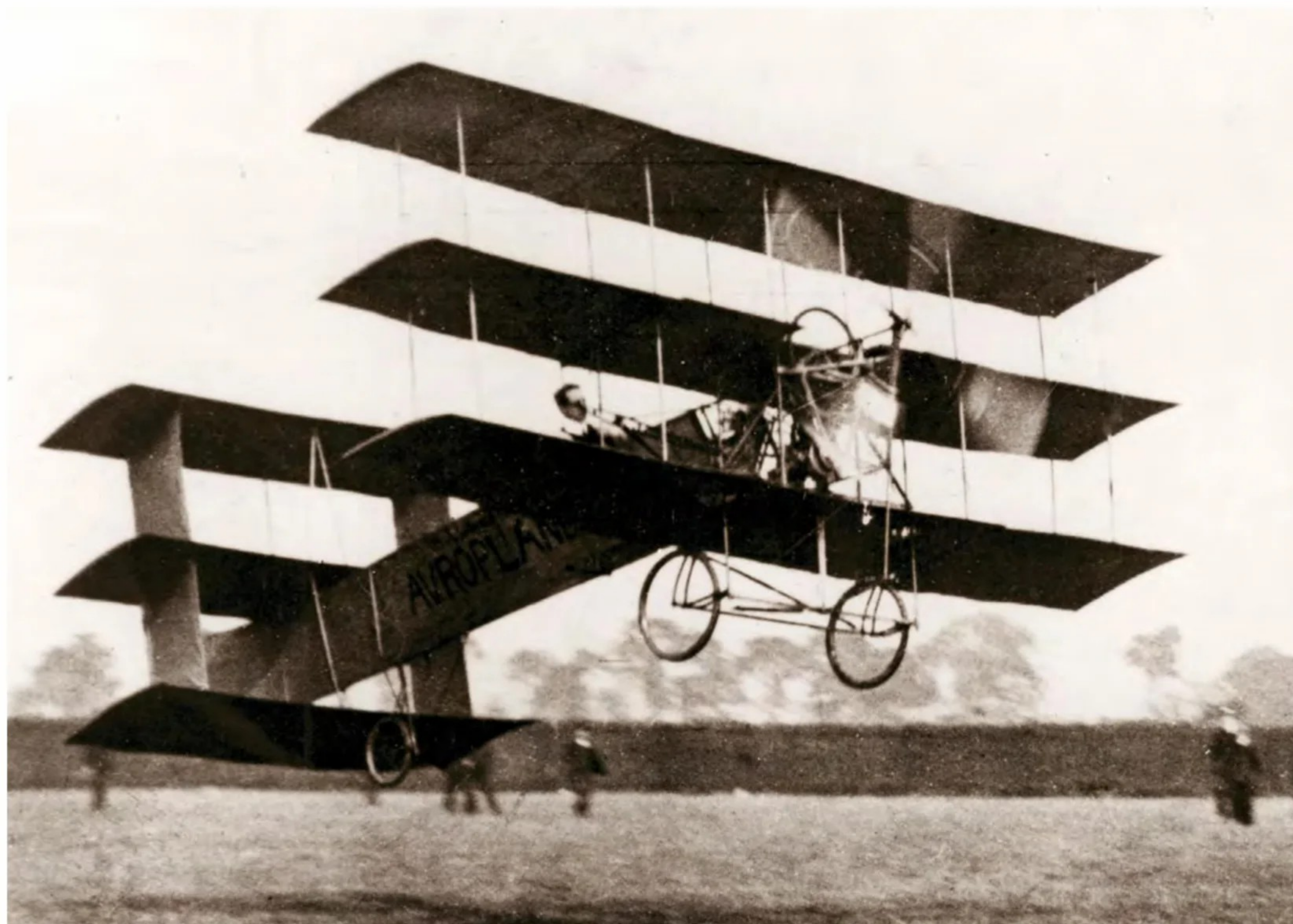
Roe arranged to test his biplane at the Brooklands motor racing circuit near Weybridge in Surrey, renting a shed to house his prototype. In December 1907, tentative trials began, towed behind a car down the

finishing straight. At the end of each session trying to get the fragile craft airborne, it would be manoeuvred sideways into the hut to await the next attempt.

Initially fitted with a 9hp JAP twin-cylinder engine, the biplane needed more power. With a borrowed French Antoinette rated at up to 24hp installed, Roe managed a few minimal 'hops' on June 8, 1908.

Time was not on Roe's side. He had annoyed the clerk of the course, Ernst de Rodakowski, who saw the experiments as troublesome and distracting from motor racing. In July, he succeeded in having the 30-year-old pioneer removed from the site. Were it not for Rodakowski's unenlightened views the venue for the first all-British flight might well have been Brooklands.

Visitors to today's fantastic Brooklands Museum can walk along the finishing straight of the world-famous motor racing circuit. Across from the beautifully restored clubhouse – it once served as Barnes Wallis's drawing office – is a wooden shed



**LEFT:** Roe aloft in his Triplane at Walthamstow Marshes, very likely September 1909 British Aerospace



**RIGHT:**  
A V Roe with  
his 1907  
biplane on the  
Brooklands  
finishing straight  
Brooklands  
Museum



that looks out of place among the elegant Edwardian architecture.

This hut is a facsimile of the original that stood at that very spot more than a century ago. Inside is a replica of Roe's biplane, along with a full-size cut-out of the aviation pioneer himself. A stroll towards the racetrack banking takes onlookers to where Roe once conducted experiments with his biplane.

Attitudes changed at Brooklands in late 1909 when Major Frederick Lindsay Lloyd took over as clerk of the course. He saw aviation as an ideal use for the land in the middle of the racetrack, turning it into a flying field. Frenchman Louis Paulhan made the first official flight at Brooklands in a Farman biplane on October 29, 1909.

Roe returned to Brooklands

in 1910, testing his designs up to the Type 500 biplane, which appeared in 1912. By then Roe's company, Avro, was well on the way to being a world-beater and Brooklands a legendary centre for the aviation industry.

**Braced for flight**

In 1909, back at Putney, Roe turned his thoughts to a triplane format. Retrospectively referred to as the Triplane Type I, this was assembled in arches under the Great Eastern Railway's Clapton viaduct on the eastern bank of the River Lea, southwest of Walthamstow, in northeast London.

Like the biplane before it, the triplane was powered by a vee-format JAP twin-cylinder of a hoped-for 10hp, but in fact gave only 9hp. The engine was built by an associate of Roe, John

Alfred Prestwich – hence JAP – at his Tottenham works. Roe's brother, Humphrey Verdon Roe or 'H V', backed 'A V' and they drew up a partnership on April 27, 1909.

Roe had already adopted the name 'Avroplane' – based on his initials and surname – which appeared on the side of the triplane. 'H V' was a successful businessman, he owned Everard Manufacturing and among its products were the very popular 'Bulls Eye' trouser braces; this trade name appeared on the triplane's minimalist fuselage.

Hops from land around the arches – the Walthamstow Marshes – were achieved on June 5, 1909. More prolonged sorties followed and on July 23 Roe achieved a distance of 900ft at a giddy height of 10ft. This was the first sustained flight

**RIGHT:**  
With his back  
to the camera  
and wearing a  
waistcoat, Roe  
and friends  
with the 1909  
triplane outside  
the arches of  
the Clapton  
railway viaduct  
British Aerospace



**FAR RIGHT:**  
The historic  
arch today  
Ken Ellis







**LEFT:**  
A cut-out of  
Roe with a  
replica of his  
biplane within a  
reconstruction  
of the shed  
he rented in  
1907 at the  
Brooklands  
Museum  
Ken Ellis

by an Englishman in a British-designed and built machine with an indigenous engine.

### Britain's Kitty Hawk

In the early hours of July 25, 1909, Louis Blériot flew the English Channel and with that any chance of Roe dominating the headlines vanished. A full-size outline of the Frenchman's monoplane was laid out in stone blocks where it came to earth, close to Dover Castle. This was



**LEFT:**  
The surviving  
Waltham  
Forest blue  
plaque on the  
north side of  
the railway  
viaduct  
Ken Ellis



unveiled with due pomp on April 15, 1910: now surrounded by woodland, the 'stone plane' is a popular tourist venue.

In June 1954, a 78-year-old 'A V' unveiled a memorial to his 1907-1908 'hops' at Brooklands. Vickers, then building Valiants and Viscounts there, funded the monument. It was another 28 years before Roe's historic exploit at Walthamstow Marshes was honoured.

Walthamstow's marshland is a delightful public open space, best accessed from the A104, the Lea Bridge Road, that links Shacklewell and South

Woodford. Like anywhere around the capital, parking requires persistence but can be found.

Where the A104 crosses the River Lea, take the footpath heading north along the west bank of the river, past new condominiums overlooking the boats plying the waterway. Soon there will be a footbridge taking you to the eastern bank, stroll up this and the railway arch looms a short distance ahead.

Today, it looks nothing like a historic flying ground. With respect to Cody, this is the British equivalent of Kitty Hawk, North





**ABOVE:**  
Charismatic  
image of 'A V'  
with his 1910  
Triplane, the  
Type III  
British Aerospace

Carolina, USA. Six years before Roe lifted off from the marshes, that's where the Wright brothers took to the skies – and the 'Brit' didn't need a catapult to get things rolling.

It took the pupils and staff of a nearby infants school to pay tribute to the Walthamstow heritage site. As part of their project on aviation the children asked the local authority if a blue plaque could mark the spot: they were turned down.

Undeterred, local councillors, members of parliament, the media and other influential 'targets' were sent letters. What was then the Greater London Council caved in and two plaques were authorised, one for each side of the railway viaduct. Children, teachers, parents and other guests held a ceremony on July 23, 1982 – the 73rd anniversary of Roe's achievement.

**RIGHT:**  
The  
Walthamstow  
Marshes  
Triplane  
on show in  
the Science  
Museum's  
Flight Gallery  
Ken Ellis

**BELOW:**  
A formal  
portrait of A  
V Roe in 1927  
as the head of  
the company  
bearing his  
name  
Hawker Siddeley

An illustrated placard was later added: dog walkers and joggers were doubtless amazed to discover that aviation history had been made alongside the river. The board is now very much the worse for wear and the plaque on the northern side of the bridge has long since disappeared.

The run down and overgrown state of the arches and the surrounding ground is disheartening. Rejuvenating the Roe commemoration is – quite rightly – far down the local authority's priorities, but surely there must be an organisation out there that would want to be associated with such a momentous event and help out?

### National treasure

Like many pioneer aircraft, the Triplane I had a brief career. It last appeared at the Blackpool

Flying Carnival, held October 18-24, 1909. This incredibly significant machine survived and was presented to the Science Museum, South Kensington, London, on short-term loan in 1925. This arrangement was made permanent on June 20, 1950, Roe himself signing the donor document.

Alongside are such icons as Cody's Military Biplane of 1912, Alcock and Brown's 1919 transatlantic Vickers Vimy, Amy Johnson's 1928 de Havilland Moth and the Gloster E28/39 jet of 1941. As far as this author is concerned, the Lea Marshes triplane is *the* gem among gems in the top floor of the Science Museum. ●

*These may help to plan your pilgrimage:* [www.visitleevalley.org.uk](http://www.visitleevalley.org.uk)  
[www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)  
[www.sciencemuseum.org.uk](http://www.sciencemuseum.org.uk)



### Beyond the viaduct

The AV Roe and Company was established in January 1910 and the name Avro – a contraction of the previous Avroplane 'brand' – was rapidly adapted. The improved Triplane II, *Mercury*, was built in the Brownsfield Mills in Ancoats, Manchester – part of Humphrey Roe's empire. Expansion was rapid; the advent of the exceptional Type 504 trainer in 1913 transformed the business from workshop to industrial giant.

In 1928, Avro was acquired by the Armstrong Siddeley Development Company. The deal was a turning point for Roe; he was looking for new diversions as his role was increasingly as a figurehead. In the autumn of 1928, Roe and colleague John Lord sold their shares in Avro and acquired the majority of Sam Saunders' Isle of Wight company. The business was renamed Saunders-Roe, Saro for short, and Roe combined his love of marine and aeronautical life.

Roe was knighted in 1929 and four years later changed his name, subtly adding a hyphen to

Verdon-Roe to honour his mother, maiden name Sofia Verdon, equally with that of his father, Dr Edwin Hodson Roe. Sir Edwin Alliott Verdon-Roe OBE, Britain's first fully indigenous aviator and co-founder of an aviation dynasty, passed away at the age of 81 on January 4, 1958, two years after the Avro Vulcan entered service with the RAF.



  
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# BATTLE OF BRITAIN LEGEND – 303 (POLISH) SQUADRON, RAF

Having spent ten years researching their role in the Battle of Britain, **Richard King** delves into the legend to answer the question: fact or fiction?

**RIGHT:** 32-year-old Ludwik Paszkiewicz, who started the legend but tragically would not survive  
Polish Institute

**N**ortholt-based 303 Squadron was declared operational on the evening of August 30, 1940, following its first victory claim by Ludwik Paszkiewicz during a training flight; an event immortalised in the movie *Battle of Britain* albeit with some artistic licence. By the time the squadron was belatedly withdrawn from the frontline for a well-deserved rest six weeks later, their official tally stood at a staggering 126 enemy aircraft destroyed. This, for the loss in combat of six pilots killed and 15 Hurricanes destroyed, not only



confirmed the Poles as the top scoring RAF unit in the Battle but also confirmed they had the best claim/loss ratio. Given what

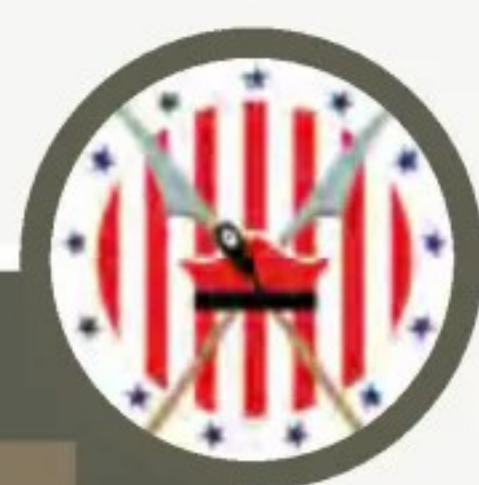
was at stake, their record was – and arguably still is – unequalled in the annals of air combat, thus cementing the legend.

While there is contemporary documented concern at the highest levels of Fighter Command and the Air Ministry regarding the accuracy of pilot claims, there was immense Government pressure for the prompt release of the RAF's daily claims and losses for both home and foreign (particularly the US) consumption, not least to counter German propaganda.

Consequently, there was not the time, the resources or the inclination to check







Fighter Command’s Top Claiming Squadrons in the Battle of Britain

Squadron	Aircraft Type	Combat			
		Claims (Destroyed)	Pilots Killed	Aircraft Losses	Days
303 (Polish)	Hurricane	126*	6	15	19
501 AuxAF	Hurricane	100	19	41	35
609 AuxAF	Spitfire	97	7	10	21
41	Spitfire	89½	10	31	32
602 AuxAF	Spitfire	84	5	15	24
213	Hurricane	83	12	19	15

\*Author’s own research identified 128½ claims

Note: Time spent in 11 Group, the toughest arena, varied making unit comparisons very difficult. For example, 501 Sqn was based in 11 Group for all but the first two weeks of the Battle whilst 609 Sqn was in 10 Group throughout, although it did operate in support of 11 Group on a number of days.

for duplication or to cross-reference claims with known enemy aircraft crash sites. Further, any such investigation could not account for Luftwaffe aircraft brought down in the sea or those which crashed on return.

Post-war research confirms that during the Battle of Britain Fighter Command over-claimed Luftwaffe losses by a factor of 3:2, i.e. three enemy aircraft claimed for every two actually lost. The speed of combat, the frequent inability to follow an enemy aircraft down (for it was simply too dangerous), and the high incidence a downed

enemy aircraft may have been attacked by multiple pilots, all of whom would, in good conscience, make a claim, contributed to the excess claiming. Exacerbating the issue was the Daimler-Benz DB601 engine, as fitted to the Messerschmitt Bf 109 and Bf 110, which would frequently belch black smoke when full throttle was suddenly applied, giving the false impression the engine had been mortally hit.

In reviewing individual squadron claims against actual Luftwaffe losses, modern historians suspect the Poles of grossly exaggerating their victories – one source crediting

303 Squadron with just 45 victories – with sceptics citing its combat claims from September 7, 1940 as irrefutable proof.

The previous day, badly controlled, 303 Sqn had been caught climbing underneath and in full view of an inbound German raid, having five out of nine Hurricanes shot down and a sixth badly damaged with five pilots wounded, two seriously. On September 7, eager not to

**BELOW:** Hurricane V7244 RF-C was delivered to 303 Squadron at Northolt on August 1, 1940, spending six weeks in frontline action. It flew 41 operational sorties from the west London base, nine of which resulted in combat. Its pilots claimed nine destroyed and one damaged

Andrew Hay-Flyingart





be caught too low again, Athol Forbes, 'B' Flight Commander, led the Poles up to 24,000ft, 4,000ft above their assigned altitude. There they executed a diving attack, partially out of the sun, on an unsuspecting German formation ultimately claiming eleven Dornier Do 215s and three Bf 109s destroyed for the loss of two Hurricanes and two pilots wounded.

The Do 215 was a re-engined export version of the Do 17Z bomber and the limited numbers available were used primarily for reconnaissance. While its more numerous sister was employed on this raid, Luftwaffe records list only two Do 17Zs as being lost in combat during the whole day's fighting, confirming for many the Poles' guilt in over-claiming.

### What is the truth?

The author must admit that when undertaking research of 303 Sqn's combats, the starting point was a very strong view the Poles *had* over-claimed, significantly. Whether that was a nationalistic viewpoint (being English), an enthusiastic but amateur's

knowledge of the Battle, the fact the Poles were flying the theoretically less able Hurricane, or all three, must remain conjecture! That said, it did allow for a robust investigation of their claims.

Given their general lack of English and unfamiliarity with the land they were now flying and fighting over, Polish combat reports tend to be brief with sometimes little geographical detail as to enemy aircraft crash sites. Indeed, one Pole unhelpfully quoted his victim as crashing "in the region of Kent"! Fortunately, we have the comprehensive reports of the senior RAF officers on the squadron: the CO, Sqn Ldr Ronald Kellett; 'A' Flight Commander, Flt Lt Johnny Kent; Athol Forbes, and the detailed Intelligence Patrol Reports (IPRs) filed by the squadron's Intelligence Officer, Fg Off Edward Hadwen, which frequently carried supplementary information.

Exhaustive cross-referencing of 303's claims with Luftwaffe raids to identify the units engaged

provided sufficient evidence to link 303 Sqn with the loss of 75 Luftwaffe aircraft, albeit a number were shared with other squadrons. It is noteworthy this figure is in-line with Fighter Command's overall over-claiming factor.

But what of 303 Sqn's claims from September 7, forever known in the squadron chronicles as the Day of the Dorniers?

RAF fighter pilots' aircraft recognition proficiency in 1940 was not of a high standard and it is fair to state that the Poles' was even worse. Kellett recalled a conversation with ACM Sir Hugh Dowding, then C-in-C Fighter Command, when the latter enquired: "Have you shown them the bloody wall where we shoot pilots who kill their own side?"

Wg Cdr Tom Neil, one of 'The Few', wryly commented to the author that during Fighter Command's "leaning into" France in 1941, he would wince whenever a Polish unit was involved, as the Poles, thanks to their reputation for poor aircraft recognition and sharp shooting,

**BELOW:** BBMF Hurricane LF363 was recently painted to represent V6665, seen here at RAF Northolt during the Battle of Britain  
Polish Institute







yards (369 metres), the Poles were closing to well under half that distance, their fire tearing lumps out of the enemy aircraft they were attacking. Vincent returned to Northolt to exclaim: "By God, they are doing it, it isn't just imagination". He would swiftly become one of the Poles' staunchest supporters.

While air combat throughout World War Two continually produced over-claiming of various degrees on both sides in all theatres, there was one major exception. During the battle for Poland in 1939, Luftwaffe combat losses actually exceeded Polish Air Force fighter claims.

**LEFT:** From left, Ronald Kellett, Johnny Kent and Athol Forbes following their presentation of the Polish VM. Was their collective posting to 303 Sqn an act of genius or a fluke?

Polish Institute

were perceived as more of a threat than the Luftwaffe!

On September 7, the location, height and timing of their initial attack placed the Poles in the same airspace as the vanguard of the bombers' escort, ZG 2's Messerschmitt Bf 110s, aircraft with the same twin-engine, twin-tail configuration as the Do 17Z/Do 215 family, a cause of frequent confusion.

ZG 2 was badly mauled losing seven aircraft, the timing and location of their crash sites around the Thames Estuary closely matching 303's claims. Modern accounts attribute ZG 2's losses to the Duxford Wing (19, 242 and 310 Squadrons) despite the fact it entered combat well after the Poles.

Accepting September 7 as an example of misidentification places a completely different – and more positive – light on 303's claims and by extension, the squadron's reputation.

But in challenging the veracity of 303's claims, modern historians are by no means the first or arguably, the most authoritative. Hadwen had already expressed concerns to Kellett, and Northolt's Station Commander, Gp Cpt Stanley Vincent, a World War One fighter pilot.

Vincent instructed Hadwen that henceforth all claims must be corroborated by another pilot. When the Poles then backed up each other's claims, Vincent

warned an affronted Kellett if the 'excessive' claiming continued he would shadow a squadron patrol to see for himself. The claims continued unabated so following one scramble, and despite the inherent dangers of flying into a combat zone on his own, Vincent covertly followed. He was simply mesmerised by what he saw; at a time when RAF policy was to open fire at 400

### Why so successful?

So, what made the Poles such excellent fighter pilots? The author interviewed Mirek Szelestowski, a former 303 Squadron Flight Commander, at length on this subject.

Most of the Poles on 303 had seen combat in Poland and/or France; they had knowledge of Luftwaffe tactics and had naturally reviewed their own

**BELOW:** Frantisek's mount on the disastrous sortie of September 6. Interested on-lookers examine the battle damage; R4175 RF-R was subsequently repaired and returned to 303 Squadron

Polish Institute





**RIGHT:** HAC's Hurricane XII G-HURI until recently wore the colours of 303 Sqn's RF-E P3700 lost in combat on September 9, 1940. Note the unit badge in its original position under the cockpit canopy  
Polish Institute

in the light of their experiences. Embarrassingly for the RAF pilots – Kellett, Kent and Forbes – assigned to command the Poles, none of them had actually seen combat...

This may have proved disastrous but fortunately for 303, in Kellett they had an Auxiliary Air Force officer rather than a permanent regular who might have felt obliged to strictly adhere to official doctrine. Tom Neil, who served under Kellett when the latter was a flight commander on 249 Sqn, referenced Kellett's unorthodox if eccentric leadership to the author; citing Kellett as constantly challenging both his pilots and groundcrew – "there was never a dull moment". Certainly, Kellett was no slave to King's Regulations, preferring to use his own leadership style and a good dollop of commonsense to resolve a variety of incidents during 303 Sqn's working-up.

Kellett would later ban his pilots from performing victory rolls: not for the generally accepted and valid reason of possible combat damage rendering the manoeuvre dangerous, but due to the critical shortage of aviation fuel. Kellett was acutely aware of the heavy losses the merchant navy was incurring trying to get vital supplies to the UK so their sacrifice could not be wasted on what he perceived as futile and irresponsible manoeuvres.



Realising the ability of his Polish charges, many of whom were pre-war instructors, and their combat experiences, Kellett fully engaged with his Polish counterpart, the popular and inspirational Zdzisław Krasnodębski.

### Doctrine

For the Poles, pre-war RAF fighter doctrine was nothing short of suicidal. Designed for encountering unescorted long-range bombers flying from Germany, these tactics were

instantly rendered outdated when the Luftwaffe occupied airfields in France and the Low Countries, thereby allowing their bomber formations to be escorted by both the Bf 110 and, critically, the formidable Bf 109.

The standard RAF squadron formation – four tight 'vics' of three aircraft each – meant the only pilot searching for the enemy was the formation leader, while the remaining 11 focussed on maintaining formation and avoiding a mid-air collision. While 303 Squadron retained the vic, instead of the close vic so beloved by the pre-war RAF it employed a much wider spread. Each of the vics also had increased separation, with the rearmost positioned well behind and above the main formation, to hopefully protect the squadron from being 'bounced' – the dreaded surprise attack. Critically, every pilot in the formation now had the ability to search for the enemy.

Szelestowski went on to explain that pre-war Poland was not the richest country in the world and their armed services suffered accordingly. The 1930s

**RIGHT:** Famous photo of Hurricane RF-F V6684 taken at Leconfield in October 1940. Polish inter-squadron rivalry is referenced by 303 Sqn being "The Polish Squadron"  
Polish Institute







Polish air arm did not have the resources for extensive formation flying practise or even to have aircraft towing a drogue at a fixed speed and height for air-to-air gunnery practise, as with the RAF. Instead, pilots were sent up individually with a weighted target on a parachute which, when at height, was thrown out of the (open air) cockpit.

The target, prone to movement in three dimensions, was then engaged by the pilot who, after a firing pass, desperately tried to keep his eyes fixed on it while manoeuvring his aircraft around for another pass. In so doing, the pilot learnt to fly the aircraft by feel, being unable to simultaneously monitor the instruments and maintain visual contact with the target. And if visual contact with the target was lost, searching the sky for such a small object improved the pilot's vision to extraordinary levels,

allowing the Poles to spot the enemy first, a major advantage in any combat situation. Finding the enemy was one thing, shooting them down was another.

### Harmonisation

Ignoring RAF policy of harmonising the guns of the Hurricanes and Spitfires to lay down a cone of fire at 400yds range, in the hope that at least a few bullets would hit the target, the Poles had their Hurricanes point harmonised to just 200yds. Szelestowski argued this would: (a) mitigate the effect of gravity on the bullet's trajectory; (b) be more effective against the armour employed on German aircraft; and (c) increase the number of hits thereby improving the chances of mortally damaging the target. It is interesting to note that the leading aces of the day had arrived at a similar conclusion, generally point harmonising

their guns at 250yds. But these aces were the exceptions; 303 was probably unique in 1940 in harmonising the guns of *all* its Hurricanes to 200yds.

The vast majority of the Luftwaffe aircraft shot down during the Battle of Britain fell to the guns of a minority of pilots; many of 'The Few' readily admitting air-to-air gunnery was a mystery to them. Simply aiming and firing at a moving target meant that by the time the bullets arrived, the target had moved, and the bullets would pass harmlessly behind. The knack was to anticipate the target's path and fire ahead, a skill known as deflection shooting.

When asked about this, Szelestowski highlighted yet another critical difference in RAF and Polish thinking. While RAF doctrine was to lay down fire ahead of the enemy aircraft

#### BELOW:

Hurricane RF-M V7235 during maintenance. V7235 would serve throughout the Battle of Britain, her pilots claiming seven victories  
Polish Institute





such that it would fly briefly through their spread of bullets, Polish preference was to engage in a rear-quarter attack, allowing them to literally formate on the target to hold it in their fire rather than it just passing through. This would inevitably increase the number of hits.

Perhaps the best proof of Polish shooting expertise came during the winter of 1941/42 when 11 Group organised an air-to-air gunnery exercise to keep its squadrons, at that time the cream of RAF Fighter Command, in tip-top condition. The top-scoring RAF squadron scored 130 points and finished fourth; two Polish squadrons finished third and second with 183 and 432 points respectively; and the overall winner was 303 with a staggering 808 points.

During the Battle of Britain, 303 had ten pilots achieve five victories or more, ‘ace’ status, a number believed unrivalled in Fighter Command. Another eight

303 Sqn Battle of Britain Aces			
Pilot	Confirmed Destroyed	Pilot	Confirmed Destroyed
Josef František	17	Mirosław Feric	7
Witold Urbanowicz*	15	Athol Forbes	7
Zdzisław Henneberg	8	Stanisław Karubin	6
Eugeniusz Szaposznikow	8	Ludwik Paszkiewicz	6
Jan Zumbach	8	Ronald Kellett	5
*Urbanowicz total includes 2 victories with RAF units prior joining 303 Sqn			

pilots would claim three or more confirmed victories.

While the Poles’ flying skills, tactics, eyesight and shooting prowess all contributed to 303 becoming Fighter Command’s top-scoring unit of the Battle of Britain, it must not be overlooked this was achieved with the best claims-to-loss ratio. This could only have been accomplished through strong discipline and teamwork, yet 1940s Polish fighter pilots had a reputation

as ferocious, attack-at-all-costs, undisciplined, reckless wild men.

In raising this issue with Szelestowski he made a telling point. In 1940 nobody had a clue as to how long the war would last. While the RAF could call upon its home population and the Commonwealth to sustain it, the Poles did not have this luxury. Thanks to the occupation of their homeland, the supply of replacements was a totally unknown quantity. Just as Fighter Command’s primary objective in the Battle of Britain was to survive, the individual Polish pilots had the same aim. Szelestowski stated: “Polish fighter pilot lives could not be given away cheaply.”

That there were discipline problems on the ground is not in doubt but in the air, with few exceptions, it was a different story. It had to be, if they were to survive.

While researching 303 Squadron, time and again the author was struck by 303 pilots breaking off combat, even when in a favourable position, to go to the aid of a friendly aircraft – not necessarily a squadron colleague – in trouble.

Ronald Kellett always saw himself as a prime beneficiary of this Polish discipline, believing the Poles had made it a matter of honour to protect their RAF commanders. After combat on September 9, Johnny Kent sought out Plt Off Zdzisław Henneberg to thank him for keeping a couple of 109s off his tail. He was stunned to find out there had actually been six!

**BELOW:** The bags under his eyes betray Sgt Josef Frantisek’s fatigue  
Polish Institute







Kellett, Kent and Forbes all survived the Battle of Britain; Kellett believing 303 was the only RAF single-seat fighter unit not to lose a CO or Flight Commander killed or hospitalised during the Battle. (Author's note: out of 46 squadrons which operated in 11 Group, just three matched 303 in this regard and none of these were in 11 Group longer than 303).

Ironically the most serious air discipline issue centred not on the Poles, but a Czech pilot, Sgt Josef František, who had resisted all attempts by the Czechs to transfer him to one of their units, claiming Polish nationality if asked!

On patrol, František had the habit of breaking away from his section to loiter over the Channel coast to catch stragglers, soon building a considerable score. In so doing however, he incensed his Polish colleagues by weakening his section, placing them under increased risk. Attempts to rein in František failed, to the point where the Poles demanded he be transferred off 303 Squadron. As František was by then one of the top-scoring RAF pilots in the Battle, this presented a major problem for Kellett – it being unthinkable to remove such a

pilot on disciplinary grounds. The solution was to make František a 'guest' of the squadron, able to go off and do his own thing, a privilege not given to any other RAF pilot, let alone a sergeant.

The issue of casualty replacements, František's indiscipline and the priority of surviving, all undermine the claim that Poles were undisciplined and reckless. Their unrivalled claim/loss ratio must serve as the final proof of their air discipline, teamwork, and situational awareness.

303 was declared operational at a critical point in the Battle of Britain; new squadrons coming into the frontline were suffering such heavy losses they needed to be withdrawn before the battle-weakened and fatigued squadrons they had relieved were ready to return. With this in mind, 303 Sqn would prove to be both the exception and exceptional.

The final words on the subject must be left to Ronald Kellett who, on leaving 303 Squadron, signed off in the Squadron Chronicles: "We fought together through the great offensive of 1940 and I then knew that the pilots of No.303 Squadron were



not only the best but would also see me through any troubles. In the month of September, 303 Squadron was on top – no squadron from the Empire could equal the courage and skill of our pilots, no bombing could daunt our airmen." ●

This article is based on the author's book *303 (Polish) Squadron – Battle of Britain Diary* available through the publisher's website [www.wingleader.co.uk](http://www.wingleader.co.uk). Photographs copyright Polish Institute unless otherwise stated.

**ABOVE:**

Standing on the wings are AC2 Wyrzykowski, Sgt Karubin and Cpl Siuwinski. Note blown gunport covers confirming combat; Karubin only made one claim flying RF-E, P3901; a 109 on October 5, 1940  
Polish Institute



**LEFT:**

Just presented with their DFCs are (l-r) Witold Urbanowicz, Zdzisław Henneberg (MIA April 12, 1941), Jan Zumbach and Mirosław Feric (killed in flying accident on February 14, 1942)  
Polish Institute





# NUREMBURG NIGHTMARE

With six of its Halifax IIIs falling to the enemy, 51 Squadron proportionately suffered the highest losses of any unit during Bomber Command’s worst night of World War Two – as **Andrew Thomas** explains

“Last night aircraft of Bomber Command attacked the German city of Nuremburg – 95 of our aircraft are missing...” – it was these words during the British Broadcasting Company’s one o’clock news on March 31, 1944, that revealed the extent of the losses on what was the worst night of the bomber offensive.

Less than 24 hours before, briefing officers at airfields across eastern England had opened with the words: “Gentlemen, your target for tonight is... Nuremburg.”

Within hours, almost 800 bombers and crews would climb away from those same airfields into the unknown. At the austere wartime airfield of RAF Snaith, near Goole, 51 Squadron listened intently as one of its flight commanders,





to operations, its performance by then was deemed unsatisfactory for the most part. This was mainly due to its underpowered Merlin engines preventing it from flying at the higher altitudes needed to avoid enemy fighters, which had become increasingly effective throughout the year. As such, towards end of 1943, 51 began receiving the much-improved Bristol Hercules-engined Halifax III.

Quickly pressed into service alongside the Halifax IIs, the IIIs were used for the first time against the enemy capital on the night of January 20, and returned twice more before the end of the month, while another two were flown in mid-February.

Bomber Command's worst night thus far fell later that month when 78 bombers were lost while attacking the Messerschmitt works in Leipzig on the 19th. Of the 78, 34 were Halifaxes – a loss rate (not including those that had turned back early with problems) of almost 15%. These losses resulted in the Merlin-powered Halifax being withdrawn from operations with immediate effect.

Throughout March, 51 Squadron participated in several successful attacks – but at the cost of several crews. Among those killed was pilot Flt Sgt Roland Seaman, air gunner/bombardier Flt Sgt Edward Andrew Glover and air gunner Sgt Leslie Harold Baldwin, their Halifax apparently hit by a Luftwaffe night-fighter using the deadly upward

**LEFT:** “Gentlemen, your target for tonight is...” - Sqn Ldr Peter Hill briefs his crews at Snaith on the afternoon of March 30. Within hours, he and 34 others in the room would be dead All images 51 Squadron Records

**BELOW:** The announcement of the night's target was always a moment of high tension in any bomber briefing...

firing ‘schräge musik’ cannon during a raid against Frankfurt on the night of March 18-19.

Seaman was a native of Goole and tragically, he had been with 51 for such a short time before his death that he'd not got home on leave. There was one of 24 heavy bombers lost that night. Another 35 were lost against the same target four nights later. Then on the 24th came the final major attack on the enemy capital – it was almost as bad as Leipzig with 74 heavy bombers shot down, two of them from 51.

So far Bomber Command's bitterest winter had cost some 600 bombers, with more than 3,000 aircrew killed and 700 more captured. Although Bomber Command would not return to the German capital in such strength again, the final chorus of what was dubbed the ‘Battle of Berlin’ reached its dreadful crescendo a few nights later.

### “The target for tonight”

At around 1830hrs on March 30, Sqn Ldr Peter Hill stood up and

Sqn Ldr Peter Hill, said those ominous words in the absence of the CO, Sqn Ldr G A Glen DFC. Outside, groundcrews worked to ‘bomb up’ its Handley Page Halifax IIIs heading to war.

### The road to Nuremberg

A long-established heavy bomber unit with 4 Group, 51 was thrown into action on the very first night of the war – three of its Armstrong Whitworth Whitley's dropping leaflets over the German city of Hamburg. Converting to the Rolls-Royce Merlin powered Halifax II in 1942, it contributed to all of Bomber Command's major attacks through 1943, including the successful Battles of the Ruhr and Hamburg.

In November that year, the Battle of Berlin commenced – 51 Squadron was, however, still flying the Halifax II. Despite its respected contributions







**“The clear, cold skies at the height band of the bomber stream also caused many of them to form condensation trails – a deadly marker”**

addressed the Station Commander, Gp Capt Noel Fresson, assembled aircrew and 51's mascot – 'Butch'. The latter was described as “an evil smelling ragbag of a dog, nearer to a sheepdog than anything else, but he could do no wrong. He never missed a briefing, and his presence was as essential as that of the Met Officer”.

Unhappily for many of those in the room, there were others present as, and with a particularly ironic twist, HQ Bomber Command's public relations department had selected that night to invite a party of press reporters and photographers to view the preparations for a raid at a 'typical' Bomber Command station. Subsequently, they were on hand to record a tragedy. The images they captured that fateful night became some of the most poignant of the entire bomber offensive.

**ABOVE:** Sqn Ldr Paul Jousse – left, the 51's Rhodesian senior navigator – helps Fg Off Harry Bowling with his flight plan for what was his first, and only, operation. He was killed just hours later

**RIGHT:** Groundcrew with 51 Squadron take a moment between tasks to pose with an unknown Halifax at Snaith

With the visitors attending the briefing, little did they know that hours later, 35 of the 119 aircrew they shared that room with, including Hill, would be dead, while another seven were, or soon to be, prisoners of war (POW).

After the intelligence brief, the Met Forecaster gave the base weather as “fine, becoming cloudy with wintry showers, fine again in late evening. Visibility – good deteriorating in the

late evening. Wind mainly north-north-west – light. Hoar frost in the early morning”.

What followed were individual briefs on the latest intelligence, the target weather, communications procedures and, most importantly, details of the target marking. During this, Nuremburg's importance as an industrial centre and a communications hub for the Russian Front was emphasised.

With the route ominously marked out in red on the large wall mounted map, it took the bombers to an assembly point over the North Sea, then to a point south of the Belgian capital, Brussels, where they picked up the infamous 'Long Leg' – a straight 200-mile leg in which crews would fight their greatest battle of the European war – before turning south towards the target.

After this, crews left to conduct their individual planning. This was always a particularly busy time for the squadron's navigators. One of those was 32-year-old Plt Off Harold 'Harry' Bowling – this was to be his first operation.

While this went on, the press saw the aircraft being prepared. Each Halifax was loaded with 40 30lb bombs and 540 4lb incendiaries. Although a bulkier load, it was lighter than those typically carried by the type to improve performance.

Sgt J McCoss, the navigator in Plt Off Mike O'Loughlin's crew who would be flying his tenth operation, noted that it would be a maximum effort “which surprised most of us because it was still





in a 'moon' period". He added: "The briefing produced a shock for everyone in more ways than one. The target was Nuremburg, a city deep in southern Germany and most of the outward journey would be in the moonlight. We were informed that the moon's effect would be offset by a layer of high cloud and a late take-off time would mean that the moon would have set by the time we reached the target area." While they voiced concerns about the selected route, 51's crews had more to worry about – they would be in the fifth and final wave to bomb. But they had a job to do.

With the press following the crews to the dispersals, they soon gathered at the Watch Office to see the Halifaxes climb into the unknown. What the more superstitious of the aircrew, many of whom had a regular and unvarying 'lucky' routine, thought is not recorded, but it probably raised some unease. It was as if they were tempting fate and the Grim Reaper.

## The 'Long leg'

At Snaith, like at other airfields, the shining half-moon led many to expect the mission to be cancelled. But the ominous glow of a red Very flare indicating the raid had been 'scrubbed' didn't come. Instead, a green Aldis light from the Watch Office pierced the air. It was 2153hrs. Almost immediately, Flt Sgt F A Hall pushed the throttles open and eased LW538/MH-N into the air, followed four minutes later by Flt Sgt Sarjantson's crew in LW541/MH-Y. Fifteen more followed them including



**ABOVE:** This crew pose for one last picture before getting to work. Note some of them are carrying their parachutes – often, crews had no chance to use them...



**LEFT:** Seen here running up, LW588/MH-O was forced to return to Snaith after the pilot's hatch blew off while departing for Nuremburg

Flt Sgt Geoff Brougham with his new navigator, Harry Bowling, in LW544/MH-Q at 2214hrs. With a scratch crew 'down the back', Hill was the last to depart three minutes later in LW777/MH-F.

Once airborne the navigators switched on their H2S ground scanning radar carried in a bulbous 'canoe' below the fuselage, then unaware the enemy's own radar could detect its transmissions.

Even before the bombers had crossed the English Coast, the Germans knew they were coming – and as they say, forewarned is forearmed.

The squadron routed south overhead Cottesmore in Rutland, before heading east as the bomber stream began forming up over England – although two of 51's aircraft flown by Flt Sgt O'Neill and WO Hayes were soon forced to abort with technical problems and returned to Snaith. LW588/MH-O returned at 0050hrs after the pilot's hatch blew off taking off and LW522/MH-J 17 minutes later after its port-inner engine developed issues.

With the remaining 15 heading out over the sea, they soon reached the turning point south of Brussels, and the start of the leg that had given rise to such unease. By the greatest of ill fortune, as the raid approached the Luftwaffe was marshalling its



**LEFT:** Smiles all round: a crew from 51 – seeming in good spirits – draw their equipment from the parachute store at Snaith before heading to their aircraft  
Alamy Stock Photo



**RIGHT:** The perils of night bombing and the robust construction of the Halifax are evident in this view of LW642/MH-L following a mid-air collision during a raid on Frankfurt on December 20, 1943. Soon repaired, it was flown by Flt Lt Pawell's crew on the Nuremberg raid – after landing safely in England, they reported a quiet trip!

**BELOW:** Sqn Ldr Peter Hill lands LV777/MH-F at Snaith after its pre-op air test. He and his crew were killed during the Nuremberg raid

**BOTTOM:** 51 Squadron's Sqn Ldr Roxborough (sitting, second from right) poses with his crew atop the warload of incendiary bombs bound for his Halifax at Snaith in 1944

night-fighters at two radio beacons – *Ida* near the German city of Aachen close to the borders of both Belgium and the Netherlands, and *Otto* near Frankfurt, 120 miles or so to the southwest. Both were immediately adjacent the bombers' selected inbound route.

Under the Luftwaffe's then still relatively new 'Zahme Sau' (Tame Boar) tactics whereby the fighter controllers broadcast the position of the bomber stream, night-fighters from all over the Reich were heading to these points. Once in the stream, the fighters would make radar contact with bombers, and attack them for as long as their fuel and/or ammunition held out.

That night, natural factors also conspired against the bombers. Not only were the winds markedly different from forecast, but the anticipated cloud cover also never materialised. More worryingly, the



clear, cold, skies at the height band of the bomber stream also caused many of them to form condensation trails – a deadly marker for the waiting night-fighters.

While most of the bombers were unsighted to one another in the dark, occasionally a crewman would report the appearance of a ghostly outline of another nearby. As O'Loughlin's

approached the turning point for the 'Long Leg', it was clear that there was considerable activity ahead. Soon the gunners were reporting a steady stream of blazing wreckage along the route.

However, although witness to carnage all around them ironically, this crew, like many others part of the great battle, were not actively involved. In fact, O'Loughlin's gunners didn't fire their guns that night. Sgt Bill Morrish, the flight engineer, recalled: "We actually flew parallel with a German fighter for some time. Luckily, I saw him, but he didn't see us, for some strange reason. I was never very hot on identification so I could not say what type; I just know that there was a swastika on the side... so he was unlikely to be friendly!" Such was the wheel of fate, but others were not so lucky.

The first of 51 Squadron's aircraft to fall was LV857/MH-H. Flown by 21-year-old Sgt Jim Binder, it was shot down close to the German village of Rossbach at 0023hrs by a Messerschmitt Bf 110G of II. Staffel (squadron) Nachtjagdgeschwader (NJG, night fighter wing) 3 (II./NJG





3) flown by Staffelfkapitän Oblt Martin Becker. It was his 21st 'kill' – there were no survivors. Ten minutes later over Fladungen, 120 miles to the east, LW537/MH-C was attacked, most likely by 9./NJG 3's Ltn Hans Raum. While two of the crew escaped the stricken Halifax to become POWs, 21-year-old pilot Flt Sgt Malcolm Stembridge, along with the rest of his crew, were killed. It was their sixth operation.

Six minutes later at 0040hrs LV822/MH-Z flown by Australian Flt Sgt Edward Wilkins, fell victim to Oblt Becker's gun and came down near Wetzlar, about two-thirds of the way down the leg – there were no survivors.

At about ten minutes to one, Australian Flt Sgt Geoff Brougham's crew (which comprised four more Australians, mid-upper gunner Flt Sgt Lloyd Peel, rear gunner Flt Sgt Arthur Williams, wireless operator Flt Sgt Kenneth Radley and bomb aimer Flt Sgt J Gowland, and two Englishmen, flight engineer Sgt H Williams and navigator Harry Bowling) in LW544/MH-Q came under attack while at 19,000ft just to the north of Alsfeld. Hit by a barrage of canon fire, likely from Oblt Becker's

Bf 110G, the Halifax began spinning. As its Australian pilot wrestled with the controls, he calmly called out the heights on the intercom in the hope that some of his crew might get out. While Williams and Gowland escaped, the rest didn't. With the aircraft ablaze, it was seen to explode at 4,000ft. The gallant 21-year-old pilot was later found in the wreckage still strapped in his seat.

Already a successful Luftwaffe night-fighter expert, Becker was credited with downing seven heavy bombers

that night alone – making him an 'ace in a day' for the then second time. The following day Becker was presented with the Ritterkreuz des Eisernen Kreuzes (Knight's Cross of the Iron Cross) by Adolf Hitler.

**ABOVE:** A pair of 51 Squadron Halifax IIIs in flight from Snaith during 1944

**BELOW:** Ground staff give the crew of LW544/MH-Q a good luck wave as it takes off for a pre-op air test from Snaith in early 1944. It, and its crew, never returned from Nuremberg



**“We actually flew parallel with a German fighter for some time. Luckily, I saw him, but he didn't see us”**







## “Of the 18 aircraft detailed, 17 had taken off, but only three had so far returned”

After the war, Becker said of that night: “They seemed to be lining up to be shot down. I just had to stop after the seventh one, I was sick of the killing.”

### Cloud cover!

Despite the losses, the bomber stream, including the 11 surviving 51 machines, pressed on. Surviving the ‘Long Leg’, they turned south towards the target – though the navigation difficulties created by the effects of the then unknown ‘jetstream’ meant that many were well off course. As they flew south, below them, the burning wrecks of nine bombers shot down formed an ominous track towards the city.

Then, almost perversely, as they approached Nuremburg the longed-for cloud cover appeared. It had been forecast to be clear over the target! The cloud, the unexpectedly fickle winds, and the enemy opposition had also affected the Pathfinders, so the target marking, and subsequent bombing accuracy was poor. To make matters worse, a near 15-mile-

long creep back had developed into open country to the north of the target as crews progressively bombed the edge of the fire area.

Nonetheless at 0114hrs on March 31, Sgt Duckworth’s bomb aimer, Flt Sgt Muir, released their load – so beginning 51 Squadron’s attack. It proved an eventful few minutes for the crew as at about the same time they were attacked by a Junkers Ju 88 at which both the gunners, Sgts O’Neill in the top turret and Stanton in the tail, fired at and reported hits. The fighter turned away and wasn’t seen again.

Flt Sgt Sarjantson’s crew bombed at the same time before both crews gratefully headed west for home. Over the next ten minutes the Halifaxes skippered by Flt Lt Pawell and Flt Sgts Davies, Pettifer,

and Hall all unleashed their loads, as did that of Flt Sgt Norton. The latter crew released their load of incendiaries from 19,000ft on seeing an intense glow of fires through the clouds. They later reported that “if the [bombing markers] were well placed the attack should have been very successful”. Mike O’Loughlin’s crew also bombed and set course for home, having noted a considerable amount of fighter activity.

While most of the crews that returned claimed they had bombed Nuremberg, subsequent analysis of the bombing photos revealed that around 120 aircraft had actually bombed Schweinfurt – some 50 miles to the northwest; another 13 dropped their loads when they realised they were lost.



**TOP:** The shattered remains of LW544/MH-Q

**ABOVE:** As Australian Flt Sgt Geoff Brougham wrestled to keep LW544 airborne, he calmly called out the heights on the intercom in the hope that some of his crew might get out. Thanks to his gallant actions, two managed to escape the stricken bomber

**RIGHT:** Station Commander Gp Capt Fresson stands forlornly on the balcony of Snaith’s Watch Tower, while personnel in the control room wait in vain for the return of 51 Squadron







**LEFT:** In one of the most haunting images captured that night, anxious eyes are cast to the skies over Snaith awaiting the return of 51 Squadron's overdue aircraft...

**BELOW:** Debrief – the strain of the previous eight hours is evident on the faces of Plt Off Mike O'Loughlin's crew – one of only three to return to Snaith that fateful night. In the centre is bomb aimer Flt Sgt Ian Craib, on his right, O'Loughlin and on his left at the head of the table is navigator Sgt McCoss

Having survived the outbound leg, the surviving 51 Squadron Halifaxes turned west for home on a route that avoided the heavily defended area of Stuttgart – about 100 miles to the southwest.

However, many aircraft uncertain of their position overflew it, including Sqn Ldr Hill in LV777. Shot down by flak near Bietigheim, just north of the city, there were no survivors. Mike O'Loughlin's crew were luckier. Having strayed close to Stuttgart, they escaped with just damage to their port wing.

### Das rechnen (The reckoning)

For the surviving ten crews, the flight back was uneventful and at just after 0530hrs Sgt Duckworth touched LW364/MH-B down onto Snaith's runway. They were the first to return. It had been an anxious wait for Gp Capt Fresson as reports of heavy losses began filtering down from HQ 4 Group at Heslington Hall in York. Fifteen minutes later Flt Lt Pawell's crew arrived. At 0608hrs O'Loughlin's navigator Sgt McCoss noted their landing time at Snaith in his log. They were the last to get back in – by then Snaith, covered with low cloud, was being battered by gusty winds and rain squalls. O'Loughlin recalled: "All was gloom as we entered the de-briefing room. Of the 18 aircraft detailed, 17 had taken off, but only three had so far returned."

Gradually reports came in that six others had landed elsewhere – including Flt Sgt Merv Hall's crew in LV880/MH-C. His navigator, Australian Fg Off Fred Kirkwood, an Australian, noted in his flying logbook: "Ops Nuremburg. Petrol shortage, landed Wing [Buckinghamshire]. 7hr 35min".

At their debrief, they noted the defences were very active and that fighters were encountered over the target. Tragically, there was one final twist in what was already a nightmare night for 51 Squadron. When trying to land in deteriorating weather, probably at Benson, LW579/MH-V flown by Plt Off Jim Brooks, crashed into the Chilterns near Stokenchurch in Buckinghamshire. Theirs was the 102nd aircraft to come down. There were no survivors.

At Snaith the journalists had remained at the Watch Office to await news of the raid. While waiting for 51 to return, they had witnessed – and experienced – the tension as the night wore on. Even after the heavy losses over Leipzig and Berlin just weeks before, no one really anticipated the scale of the disaster that had befallen them... over a third of the squadron, gone, in a single night.

Of their presence one of the survivors, Sgt Philip Bailey, Mike O'Loughlin's rear gunner, said: "They watched and waited so considerably whilst the lads were coming in but, as time went on, they too became aware that there were some losses. I shall never forget the faces of two of them – both middle aged – when it was quietly put to them that six crews were unaccounted for, 42 lads of the 119 they had watched set off into the night sky. The notebooks and cameras were put away and the owners quietly left, obviously not wishing to intrude on our feelings."

In all 95 aircraft were missing, and ten more were known to have crashed in England on return. In what would be Bomber Command's worst night, 537 men had been killed and 157 became PoWs – although 11 evaded capture to return home. For 51 Squadron, it had lost six Halifaxes from 17 – a staggering 35% of those despatched that night; proportionately the biggest loss to any of the squadrons involved. It was the nadir of 51 Squadron's war. ●





# *FlyPast*

On target: This lone Handley Page Halifax was photographed during a daylight raid against the underground German military complex at Mimoyecques, near Marquise in northern France on July 6, 1944 TopFoto









- 1

Starboard navigation light
- 2

Formation light
- 3

Aileron balance weight
- 4

Wing skinning
- 5

Starboard aileron
- 6

Aileron servo tab
- 7

Trim tab
- 8

Wing stringer construction
- 9

Landing/taxiing lamp
- 10

Carburettor air intake duct
- 11

Exhaust collector ring
- 12

Propeller hub pitch change mechanism
- 13

De Havilland three-bladed propellers
- 14

Bristol Hercules XVI radial engine
- 15

Oil cooler intake
- 16

Cowling air outlet flaps
- 17

No 6 fuel tank, capacity 123 imp gal
- 18

No 5 fuel tank, capacity 122 imp gal
- 19

Leading edge oil tank
- 20

No 4 fuel tank, capacity 161 imp gal
- 21

No 3 fuel tank, capacity 188 imp gal
- 22

Fuel tank breather
- 23

No 1 fuel tank, capacity 247 imp gal
- 24

Trailing edge ribs
- 25

Starboard flap construction
- 26

Starboard fuel jettison pipes
- 27

Starboard main undercarriage wheel bay
- 28

Inboard wing section bomb cells
- 29

Starboard inner engine cowlings
- 30

Asymmetric windscreen
- 31

Nose skinning
- 32

De-icing fluid tank
- 33

Nose section frames
- 34

Spare ammunition drums
- 35

Bomb aimer's control panel
- 36

Nose glazing
- 37

0.303in Vickers 'K' GO gun
- 38

Bomb aiming panels, optically flat
- 39

Bomb sight
- 40

Bomb aimer's prone position couch
- 41

Pitot tube
- 42

Parachute stowage
- 43

Navigator's folding seat
- 44

Chart table
- 45

Ventral escape hatch
- 46

Camera
- 47

Aerial rail
- 48

Radio transmitters and receivers
- 49

Radio operator's control panel
- 50

Rudder pedals
- 51

Instrument panel
- 52

Co-pilot's and flight engineer's folding seats
- 53

Control column
- 54

Pilot's seat
- 55

Cockpit floor level
- 56

Cabin side windows
- 57

Radio operator's seat
- 58

Trailing aerial winch
- 59

Bomb-bay doors (open)
- 60

Bomb door operating jacks
- 61

Main floor/bomb-bay support longeron
- 62

Oxygen bottles
- 63

Parachute stowage
- 64

Front fuselage diagonal bracing strut
- 65

Flight engineer's control panel
- 66

Astral dome
- 67

Fuselage skin plating
- 68

Hydraulic accumulator
- 69

Batteries
- 70

D/F loop aerial fairing
- 71

Nose/centre section joint frame
- 72

Cabin roof escape hatch
- 73

Heater duct
- 74

Rest bunks, port and starboard
- 75

Hydraulic accumulators
- 76

Escape ladder
- 77

Fuselage/rear spar joint frame
- 78

Rear escape hatch
- 79

Fuselage upper longeron
- 80

Upper turret ladder
- 81

Flare stowage
- 82

Sea marker stowage
- 83

Turret mounting ring
- 84

Boulton Paul A Mk III mid-upper gun turret
- 85

Four 0.303in Browning machine guns
- 86

Tail gun turret ammunition boxes
- 87

Rear fuselage frame construction
- 88

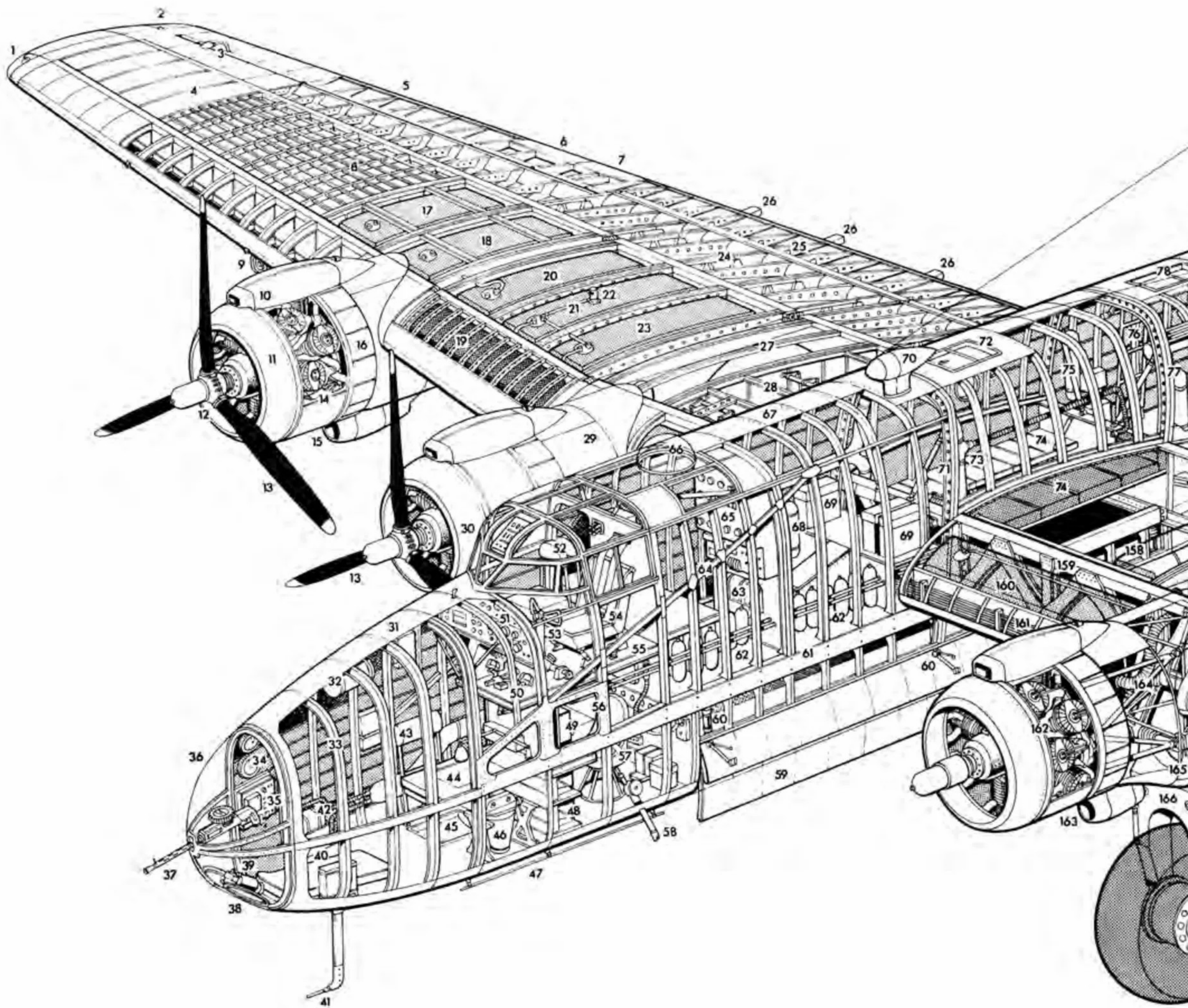
Ammunition feed tracks
- 89

Tail fuselage joint frame
- 90

Tail gunner's access door
- 91

Tailplane mounting
- 92

Starboard tailplane construction

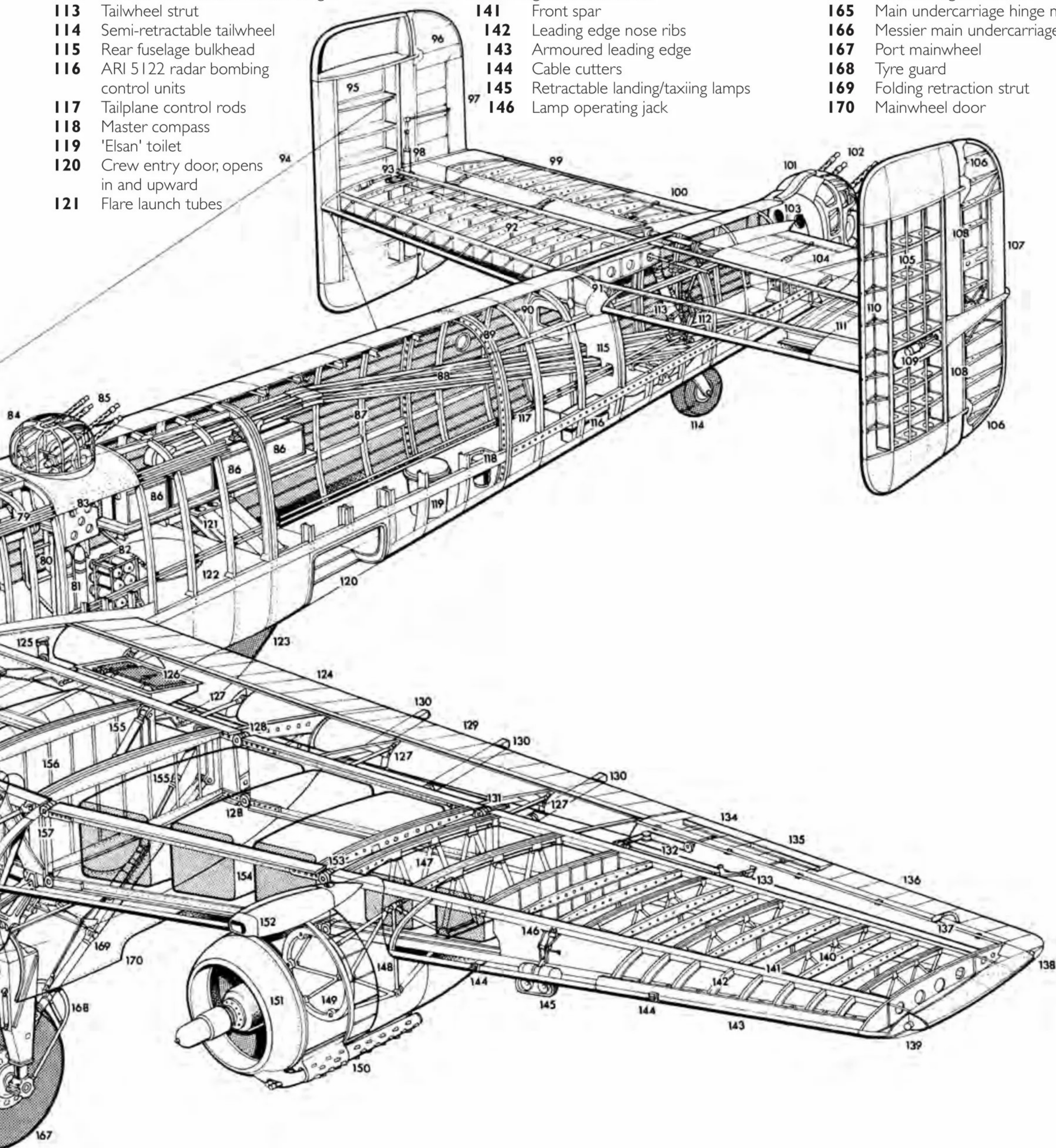




- 93 Rudder hinge control
- 94 Aerial cable
- 95 Starboard tail fin
- 96 Starboard rudder upper section
- 97 Rudder trim tab
- 98 Rudder hinge post
- 99 Starboard elevator construction
- 100 Elevator trim tab
- 101 Boulton Paul Type E tail gun turret
- 102 Four 0.303in Browning machine guns
- 103 Turret sliding doors
- 104 Port elevator
- 105 Port tail fin construction
- 106 Rudder upper and lower sections
- 107 Rudder trim tab
- 108 Rudder aerodynamic balances
- 109 Trim tab control jack
- 110 Leading edge bracing struts
- 111 Port tailplane
- 112 Rudder and elevator control hinges
- 113 Tailwheel strut
- 114 Semi-retractable tailwheel
- 115 Rear fuselage bulkhead
- 116 ARI 5122 radar bombing control units
- 117 Tailplane control rods
- 118 Master compass
- 119 'Elsan' toilet
- 120 Crew entry door, opens in and upward
- 121 Flare launch tubes

- 122 Main fuselage floor level
- 123 H2S radar bombing antenna fairing
- 124 Port inner flap
- 125 Flapjack
- 126 Dinghy stowage
- 127 Flap control rods
- 128 Rear spar inboard section attachment joints
- 129 Port outer flap
- 130 Port fuel jettison pipes
- 131 Rear spar outer panel attachment joint
- 132 Trim tab controls
- 133 Aileron hinge control
- 134 Trim tab
- 135 Aileron servo tab
- 136 Port aileron
- 137 Aileron balance weight
- 138 Formation light
- 139 Port navigation light (Red)
- 140 Wing rib construction
- 141 Front spar
- 142 Leading edge nose ribs
- 143 Armoured leading edge
- 144 Cable cutters
- 145 Retractable landing/taxiing lamps
- 146 Lamp operating jack

- 147 Outer engine mounting ribs
- 148 Engine bearer struts
- 149 Engine mounting ring
- 150 Flame suppressor exhaust pipe
- 151 Exhaust collector ring
- 152 Carburettor intake duct
- 153 Outer wing panel joint
- 154 Port wing fuel tanks
- 155 Main undercarriage jacks
- 156 Port mainwheel bay
- 157 Inner wing panel front spar joint
- 158 Wing bomb cell long-range fuel tank, capacity 96 imp gal
- 159 Front spar girder construction
- 160 Leading edge No 2 fuel tank, capacity 62 imp gal
- 161 Engine control runs
- 162 Port inner Bristol Hercules XVI engine
- 163 Oil cooler air intake
- 164 Inboard engine bearers
- 165 Main undercarriage hinge mounting
- 166 Messier main undercarriage leg
- 167 Port mainwheel
- 168 Tyre guard
- 169 Folding retraction strut
- 170 Mainwheel door







"We leave tonight at sundown  
Expect us back at dawn"

H A N D L E Y   P A G E   L I M I T E D   L O N D O N





**Handley Page Halifax C.VIII  
G-ALEF 'Red Eagle', Eagle Aviation  
Ltd, Berlin Airlift, 1949**

Converted as a military transport for the RAF, G-ALEF was the penultimate Halifax built. Starting life as PP337, it first flew on July 11, 1945 and was accepted for service later that month. Quickly deemed as surplus, it was acquired by Norway's Vingtor Airways in August 1947 as LN-OAT and finished in an all-over red scheme. Returning to the UK the following October, it joined Eagle Aviation as G-ALEF and was nicknamed 'Red Eagle'. Going on to become one of the 41 civilian registered Halifax aircraft taking part in the Berlin Airlift between June 24, 1948 and May 12, 1949, it had been broken up and scrapped by January 1950

All artwork Andy Hay-Flyingart





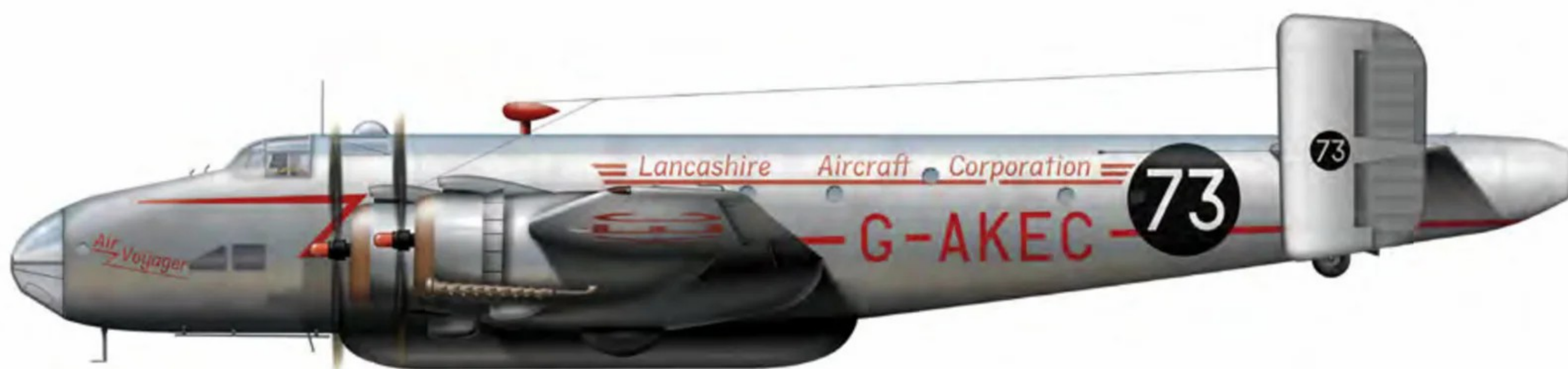


**Handley Page Halifax Mk.III LK797/LK-E ‘Excalibur’, RAF, 578 Squadron, March 30, 1944**  
One of 661 Halifaxes built by Fairey Aviation, LK797 joined 578 Squadron in early 1944 and dubbed *Excalibur*. On March 30 that year, it was dispatched to Nuremburg with regular pilot Cyril Barton. Attacked by a German night-fighter, which led to most of his crew, including the navigator, abandoning the near-mortally damaged Halifax, Barton pressed on to Nuremburg – guided only by the stars and his map. Later crash-landing in England while trying to get home, Barton died of his injuries. But his selfless actions had saved the three remaining crew, and resulted in the 22-year-old pilot officer being posthumously awarded the Victoria Cross on June 27 that year



**Handley Page Halifax Mk.VI Q1279, Royal Pakistan Air Force, No.12 Squadron, RPAF Base Chaklala, 1949**  
Finished in Dark Earth/Mid-Stone night camouflage with a dull red serial number on the fuselage, high visibility national markings outlined in yellow and a white serial number under the wings, Q1279 was one of six English Electric-built Mk.VIs delivered to Pakistan in 1949 – all were former RAF machines. Deemed surplus on delivery and placed into storage, the airframes were acquired by London Aero & Motor Services for refurbishment before being ferried to Pakistan. Remaining in Pakistani service until 1954, the aircraft were placed in long-term storage due to their high operating costs and eventually scrapped





**Handley Page Halifax C.VIII G-AKEC/73, Lancashire Aircraft Corporation, 1950 Daily Express South Coast Air Race**

Originally built by Handley Page for the RAF as PP282, G-AKEC was registered to the Lancashire Aircraft Corporation on February 12, 1948. Named *Air Voyager*, it flew 159 sorties during the Berlin Airlift, before seeing in the 1950s as an 'overnight freight runner' carrying newspapers between Manchester and Belfast. On September 16 that year, 'Echo-Charlie' took part in the Daily Express South Coast Air Race. Flown by Capt A N Marshall, G-AKEC came 24th with an average speed of 267mph. Damaged beyond repair during strong winds at Blackpool Airport on December 17, 1952, it was withdrawn from use on March 4, 1953



**Handley Page Mk.VII PN230/EQ-V 'Vicky The Vicious Virgin', RCAF, No.408 'Goose' Squadron, RAF Linton-on-Ouse, 1945**

As far as Bomber Command nose art is concerned, PN230 must be considered one of the most elaborate of World War Two. One of 90 Mk.VIIs built by Fairey Aviation, it joined No.408 'Goose' Squadron in February 1945 and was assigned to WO Ron Craven and his crew. Opting to name the aircraft *Vicky The Vicious Virgin* in light of some of their "amorous adventures with British ladies", the distinctive 'pin-up' artwork was created by bomb aimer Bert Evans. Having already completed eight missions, the crew chalked up another 13 in *Vicky* before the squadron converted to Avro Lancaster B.Xs in May 1945



**Handley Page Halifax B.III MZ913/Z5-N 'Jane', Royal Australian Air Force, No.462 Squadron, RAF Foulsham, April 1945**

MZ913 was one of the 900 B.IIIs rolled out by English Electric from Samlesbury in Lancashire. Delivered to 462 Squadron in August 1944, when the unit was retasked as a radio countermeasures unit with 100 Group at RAF Foulsham in Norfolk, the airframe was modified with Airborne Cigar (ABC) radar jamming equipment – note the antennas atop the fuselage. Dubbed *Jane* and credited with more than 100 sorties while with 462, MZ913 was withdrawn from service and delivered to RAF Pengam Moors near Cardiff on May 4 the following year. Later scrapped, it was officially struck off charge on March 14, 1947



# DON'T FEAR THE REAPER

It was said to be 'jinxed', yet flew more missions than any other Halifax, got three crews safely through their tours and even survived Bomber Command's costliest raid. **Jamie Ewan** recounts the story of *Friday the 13th*, the Halifax that wouldn't be beaten

A

s Handley Page Halifax III LV907 growled over RAF Lissett on delivery to 158 Squadron, it looked almost identical to the others scattered around the East Yorkshire airfield. But those watching couldn't help but notice that it lacked any telltale scars of war – it was another replacement. They could not have known it at the time, but this Halifax was to become a legend.

### “Failed to return”

Rolled out from Handley Page's Radlett factory in Hertfordshire during February 1944, LV907 was accepted for service the same month. Assigned to No.4 Group and delivered to Leconfield near Hull soon after, it was initially held in reserve. The airfield was then home to the Australian-manned 466 Squadron and the recently formed 640, and it



The Yorkshire Air Museum's remarkable Handley Page Halifax III reproduction carries the markings of 'Friday the 13th' on its port side  
KEY: Jamie Ewan



had been the intention to allocate LV907 to one of these. Instead, it transferred to 158 at Lissett, 17 miles northeast, with a crew ferrying it there on March 10. On arrival, it was accepted as a reserve. However, when HX342/NP-F *F-for-Freddy* “failed to return” from Frankfurt on the night of March 22-23, groundcrew were tasked with preparing LV907 for war.

Of the HX342 crew, only 21-year-old rear gunner Flt Sgt Leslie Morgan survived, escaping the stricken bomber to become a prisoner of war. While losses on bombing raids were inevitable, HX342 was the seventh *F-for-Freddy* that 158 had lost in just over 14 months, leading many to think that F-coded machines were somehow jinxed. When LV907 appeared as ‘NP-F’, it sent shivers across the station.



HX342 had flown 13 missions, nine of them with regular pilot Sgt Clifford Smith, who had arrived the previous December. Technically, he and his crew had first claim on LV907, but they were still on leave on March 30 when 158 received a Battle Order for a “maximum effort” raid that night. The target? Nuremburg.

### Lucky for some

One of 16 aircraft allocated from 158, LV907 still needed a crew. Flt Sgt Joe Hitchman thought his crew was heading off for a much-needed break when he got the call. He later recounted: “We were supposed to be going on leave that day and had actually got to the main gate when we were recalled!” Dismayed, they made their way to the briefing, where they found out their regular aircraft, HX349/NP-G, had been assigned to the A Flight commander, Sqn Ldr Sam Jones. Instead, they would crew *F-for-Freddy*.

As Hitchman weaved LV907 towards the runway, he watched Jones guide *G-for-George* into the moonlit skies to join the 779-strong bomber stream bound for the German city. As he pushed open LV907’s throttles at 2208hrs, he couldn’t have known at the time that that would be the last time he saw his former mount.

**ABOVE:** The ‘Smith crew’ with ‘Friday’ at Lissett on August 1, 1944. From left, standing, they are: mid-upper gunner Ronnie Clarkson, flight engineer Ron Neary, bomb aimer ‘Kiwi’ Smith, pilot Clifford Smith, wireless op/air gunner Eric King, navigator Harold King and rear gunner John Goff, while kneeling from left is engine fitter Mick Miller, Sgt Tom Daly, the NCO in charge of the airframe, and Flt Sgt Bill Cartwright

All images KEY Collection unless stated

While much has been written about Bomber Command’s worst night of the war (see *Nuremberg Nightmare*, pages 50-57), the supposedly jinxed LV907 proved to be a lucky charm for its first crew. By the time Hitchman eased the Halifax back to Lissett some seven-and-a-half hours later, news about the losses from what had been expected to be a ‘typical’ raid was filtering through: 105 bombers had been lost. While 95 fell to the enemy, ten had crashed in England trying to get home. Come dawn, the grim reality hit home: some 800 men were missing, with fears that more than 500 of them were dead.

Although LV907 survived its baptism by fire, four of 158’s bombers failed to return, including *G-for-George*. One of the few downed by flak that night, it had crashed near the Rhineland Palatinate town of Hachenburg with the loss of Sqn



**RIGHT:** The ‘Gordon crew’ pose with ‘Friday the 13th’ following its 81st operation – a daylight strike on Domberg on October 28, 1944. From left are bomb aimer Fg Off William Peters, navigator Flt Sgt James Murray, flight engineer Sgt Arnold Hawthorn – the only non-Canadian – pilot Fg Off Norman Gordon, mid-upper gunner Sgt John Hyde, tail gunner WO Lawrence Pye, and wireless/air gunner Flt Sgt Thomas Little

Ldr Jones and his 23-year-old mid-upper gunner, Flt Sgt Kenneth Bray.

**“The stuff of nonsense”**

With 158 losing 25% of its attacking force on the Nuremberg raid, it would be another nine days before the squadron was back in action, by which time Clifford Smith – then a pilot officer – had returned from leave to take charge of LV907 with his crew: New Zealand-born navigator Flt Sgt Harold King, flight engineer Sgt Rod Neary, bomb aimer Flt Sgt Keith ‘Kiwi’ Smith (another New Zealander), wireless operator/air gunner Flt Sgt Eric King, Australian mid-upper gunner Flt Sgt Ron Clarkson and rear gunner Sgt Jack Goff.

With most of the crew having already flown nine missions together – four more than average – bonds had been forged through a crucible of fear, freezing temperatures, deadly flak and prowling night-fighters. They knew their odds of survival were still slim – only one in six crews were expected to make it through their first tour of 30 operations, so the chances of surviving a second tour didn’t bear thinking about.

For some, it was too much, as Eric King later revealed: “At first, we were just like kids, all enthusiastic and eager to get to work. But after



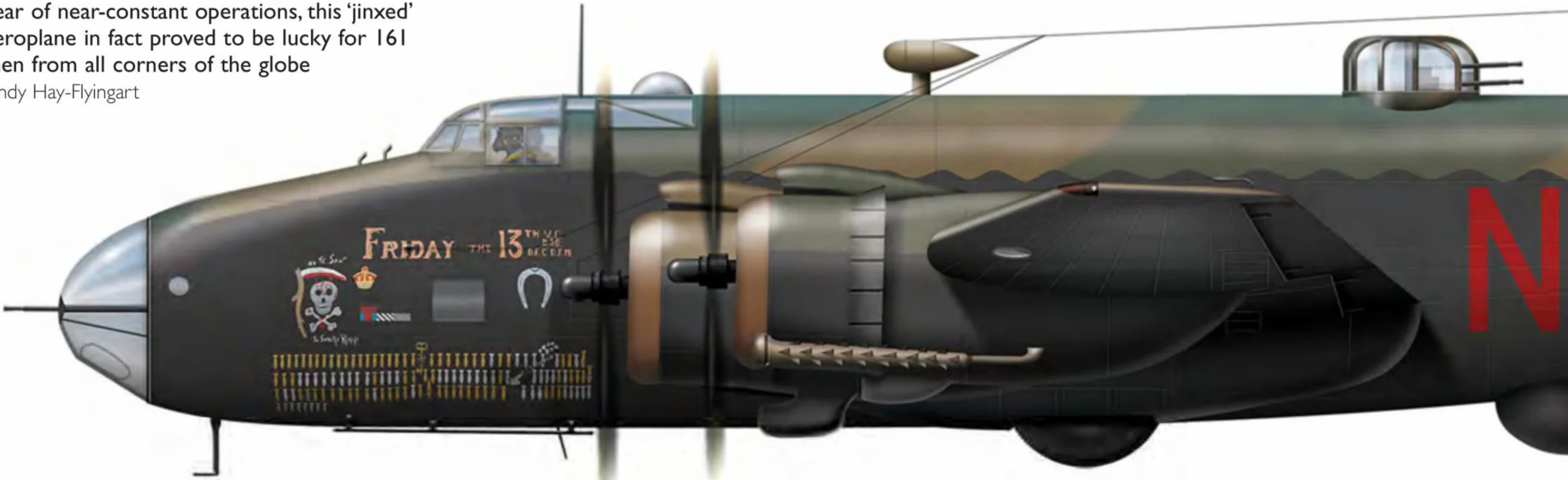
five missions or so, the seriousness of the situation and the peril we faced began to sink in. The groundcrew had bets on which would be the first aircraft back. I heard someone say ‘It won’t be a case of who is first back, but who is coming back.’ I thought, God almighty. Our first tail gunner found it harder than most. He only completed four operational missions with us before being overcome with fear and exhaustion.”

With such uncertainty and fear, superstitions were almost inevitable, unless you were Clifford Smith, who branded it “the stuff of nonsense”. In fact, when asked by crew chief LAC Jack Wicks what to name their newly allocated Halifax, he replied: “Gosh! I don’t care. I’m not superstitious... call it what you like, Jack!” By early April 1944, LV907 had become *Friday the 13th*.

On painting the name on the nose, Wicks added a skull and cross bones, a scythe dripping blood and the words “As Ye Sow... So Shall Ye Reap”. It’s thought the latter was in reference to a comment made by Bomber Command leader AM Arthur Harris on June 3, 1942. During a speech on the strategic offensive against Germany he said: “They sowed the wind and now they are going to reap the whirlwind.”

Taking full advantage of Smith’s nonchalance on the matter, Wicks added an inverted horseshoe and broken mirror, and even went so far as painting a morbid white tombstone with the crew’s names on it, and an open ladder above the entry hatch. This, along with the tombstone, were later removed. It was considered that the ‘grave’ would shine too brightly when pinned by searchlights and that the ladder was deemed to be

**BELOW:** ‘Friday the 13th’ – in just over a year of near-constant operations, this ‘jinxed’ aeroplane in fact proved to be lucky for 161 men from all corners of the globe  
Andy Hay-Flyingart





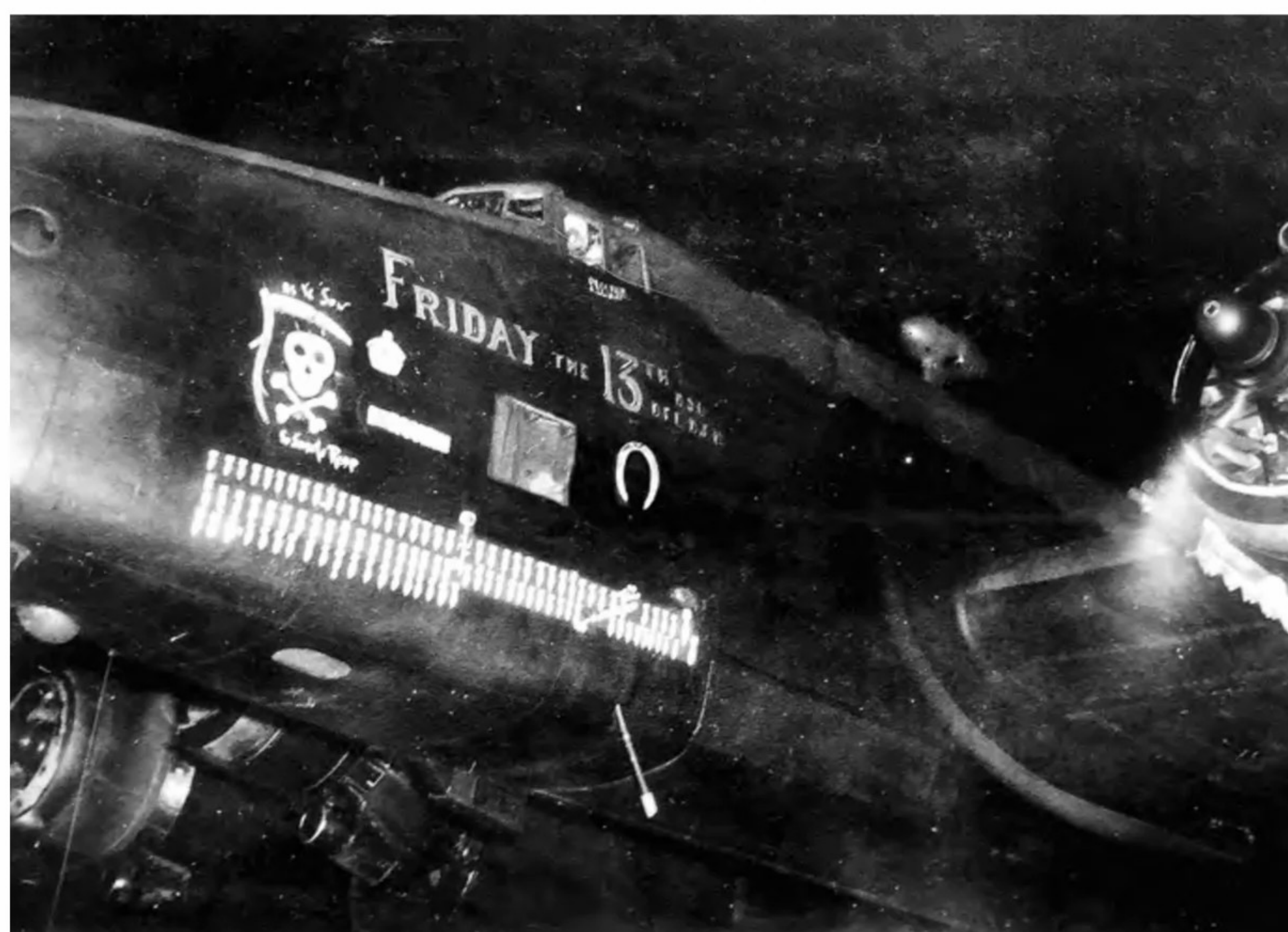
“taking things too far”. However, the tombstone did remain on the flag the crews would later fly from *Friday* while taxiing to and from the runway.

Unsurprisingly, not everyone was happy with the name. King recalled: “The squadron leader came along after we had named and painted it. He said, ‘If I have to fly that thing, I’ll need a gallon of thinners first!’ I think we were all superstitious – I used to tap the side as I went in.” But would giving *F-for-Freddy* an unlucky name break the so-called jinx?

### Luck of the draw

Smith’s crew climbed away from Lissett at 2040hrs on April 9 for their debut mission in LV907 – a strike against the marshalling yards (MY) at Villeneuve-St-George, near Paris. With ‘Kiwi’ Smith releasing their warload just before midnight, Smith eased *Friday* back onto Lissett’s runway two hours later. They were back in action later on April 10, with the first of two trips against the MY at Tergnier in northern France, the other being on April 18. While these proved uneventful for LV907, 158 lost five aircraft and 30 aircrew.

Two days later, they flirted with disaster. Shortly after dropping their bombs on the MY near the Belgian town of Ottignies, Goff spotted a Focke-Wulf Fw 190 night-fighter stalking them. Firing LV907’s guns in anger for the first time, the aggressor quickly disappeared into the night skies. On April 22, they took part in a heavy attack that saw 2,150 tonnes of bombs dropped on Düsseldorf. Touching down at 0317hrs, Jack Wicks met the Halifax and added a fifth mission mark. No matter the



weather or time, he always diligently added a new mark within hours of LV907’s return.

With another four trips against rail and communication lines seeing out April, Hitchman’s crew climbed aboard *Friday* for a strike against the MY at Malines in Belgium. Departing at 2150hrs, they arrived home at 0140hrs.

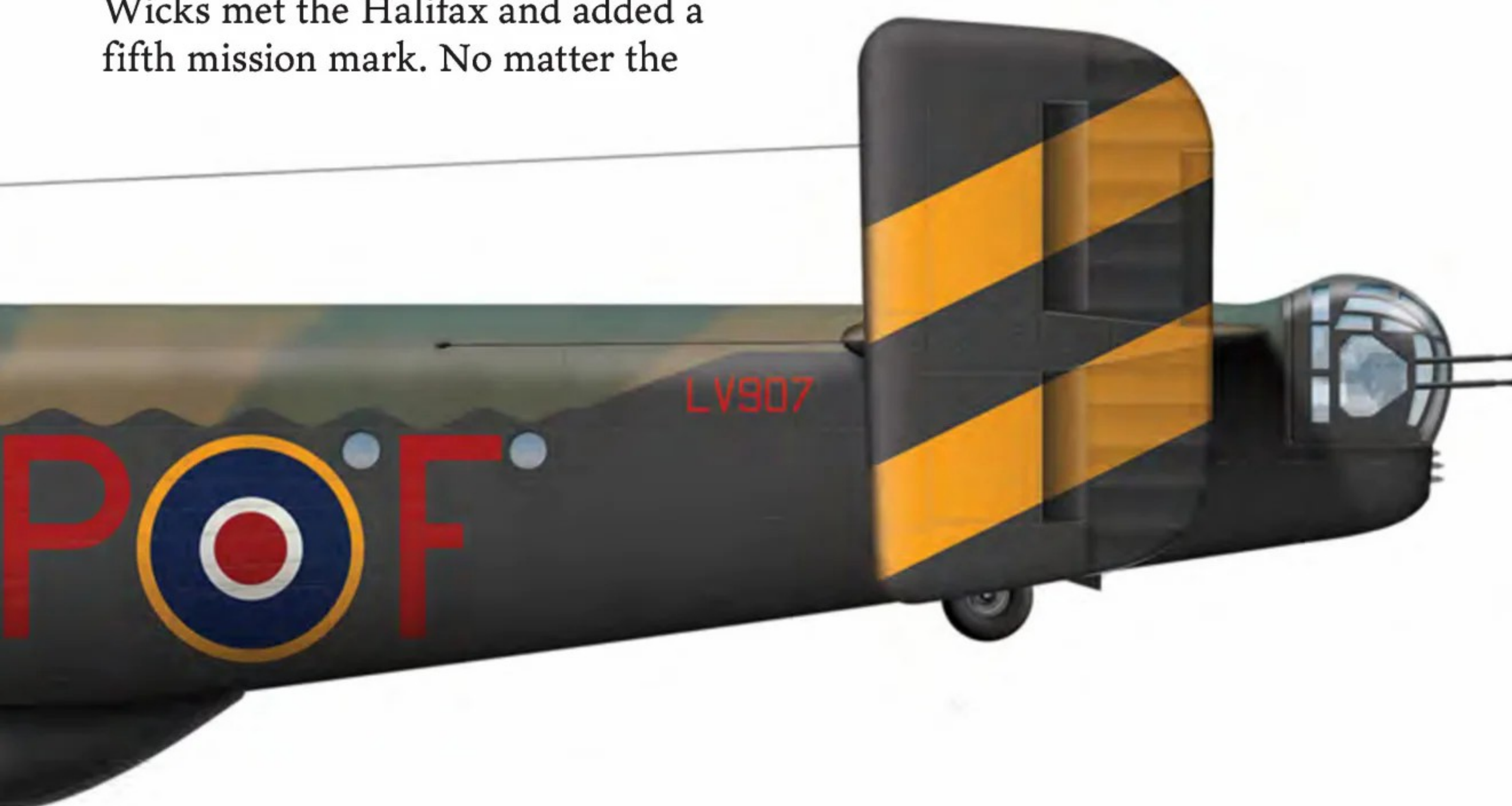
As operations intensified in preparation for the Allied invasion of western Europe, *Friday* undertook five missions over the next two weeks, four times with Smith and once with Flt Sgt John Evans – the latter a raid against the MY at Lens in France’s Pas-de-Calais. Taking off at 2124hrs, and dropping their bombs from 9,500ft two hours later, they landed back at 0108hrs.

**ABOVE:** Fg Off Norman Gordon peers down from LV907’s cockpit moments after coming to a stop at Lissett in the early hours of January 23, 1945, following the bomber’s 100th operation

Two days later, Evans and his crew were shot down during a strike on Hasselt, Belgium. That night, *Friday* was back in the hands of Smith. Climbing away from Lissett at 2157hrs, they returned at 0217hrs. A week later, they were in the thick of it again, with ‘Kiwi’ Smith dropping their bombs on the MY at Boulogne-sur-Mer from 12,000ft. It was their 13th mission in LV907.

On May 24, *Friday* was one of 20 aircraft the unit dispatched to Aachen, Germany. Departing at 2248hrs, about three hours later mid-upper gunner Ron Clarkson saw a Junkers Ju 88 homing in on their port quarter. Opening fire, the Australian noted sparks coming from the German machine as it broke away. Smith landed safely at 0252hrs to learn that five of 158’s aircraft were missing. A strike on Belgium’s Bourg Leopold followed three nights later, after which *Friday* evaded two single-engined night-fighters on June 2 while attacking a radar station near Cherbourg in Ferme d’Urville.

On the night of June 5, Smith left Lissett at 0050hrs with 22 others from 158 to hit the coastal battery at Maisy in Normandy’s Calvados







**TOP:** A wartime view of LV907's nose art and bomb tally shortly after January 23, 1945. The bomb flying vertically into a football goal was used to mark the 100th 'op' – it was later changed as more symbols were added

**ABOVE:** The 'Waterman crew' – from left, they are: flight engineer Vincent Creane, mid-upper gunner Kenneth Cammack, wireless operator/air gunner Brian Wilbraham, pilot Derek Waterman, bomb aimer Reginald Littlemore, rear gunner John Jackson, and navigator Wilfred Tyler. Kneeling are groundcrew Jack Wicks (left) and Tom Daly

region. Dropping through 8/10th cloud cover, *Friday* arrived home just after 0600hrs on what had been its 21st mission. To mark this 'coming of age', Jack Wicks added a 'key of the door' to her tally.

With the intensity of operations increasing, groundcrews worked almost non-stop as one Battle Order followed another. Between June 6-30, *Friday* flew 12 raids across occupied Europe, including more than one in the same 24-hour period. Smith piloted four of these, while Australian Flt Sgt Ralph Chilcott flew five and Plt Off Roland New, Flt Sgt Edwin Pulsen, and New Zealander WO Leslie Fulker all flew one each, taking LV907's mission count to 33. Killed in action on September 12 that year during his 30th operation, Fulker was one of the few captains connected with *Friday* who failed to finish his tour. With 31 missions to his credit, Smith had all but completed his tour when the requisite total was increased towards the

40 mark – a change that almost cost him his life.

**Close call**

Returning to the fray on July 1 with a late afternoon strike against the V-1 site at Oisemont in northern France, Smith pulled *Friday* into the air at 1529hrs. Running in to the target at 13,000ft through spasmodic flak, an exploding shell hurled hot shrapnel into LV907's forward fuselage, setting an ammunition container alight. It exploded and the subsequent blaze quickly spread. With the situation worsening by the second, Neary and Eric King fought the fire while, unknown to them, Harold King had suffered an injury. Despite his discomfort, the Kiwi navigator refused any medical attention until he was sure they were clear of the target.

With Smith easing the damaged *Friday* down at 1907hrs, Wicks added a special bomb symbol to mark her near demise. For their coolness in the face of extreme danger, all three airmen, as well as Smith, were awarded medals for gallantry: Clifford and Harold King received the Distinguished Flying Cross, while Neary and Eric King gained the Distinguished Flying Medal.

This incident is thought to have occurred during LV907's 35th operation, although 158 Squadron records suggest it was the 34th. Interestingly, the aircraft's record card shows no entry indicating battle damage. While it's possible another operation involving LV907 prior to July 1, 1944, has been omitted, the total





number of operations entered against *Friday the 13th* equals her recognised 128, meaning it was likely credited with another flown by a different Halifax – a possible clerical error in the fog of war.

With *Friday* flying eight operations in July – which included another brush with a Ju 88 that Goff claimed as ‘damaged’ on July 21 and a near eight-and-a-half-hour trip to Stuttgart on July 24 – Smith’s crew completed their tour with an attack on the V-1 facility in northern France’s Chapelle Notre-Dame on August 1. With 10/10th cloud on the outbound leg, the raid was abandoned at 2134hrs. Turning for home, *Friday* touched down at Lissett an hour or so later. Incredibly, this supposedly jinxed bomber had seen its crew safely through 29 operations.

### Half-century and more

Less than a day later, LV907’s new regular pilot, Flt Sgt Derek Waterman (who has flown her twice previously), climbed for a strike against the V-1 facility at Forêt de Nieppe in northern France. Having joined 158 that June, Waterman’s all-sergeant crew comprised navigator Wilfred Tyler, flight engineer Vincent Creane, bomb aimer Reginald Littlemore, wireless operator/air gunner Brian Wilbraham, mid-upper gunner Kenneth Cammack and rear gunner John Jackson.

Going on to fly 12 raids consecutively during the first 18 days of August, Waterman was in the cockpit when *Friday* surpassed the 50-mission mark on August 9 with an uneventful trip to Bois-de-Haye in northeast France.

Departing just after 1100hrs, Littlemore was able to map-read his way to the target, releasing bombs visually from 12,000ft three hours later.

With another two missions chalked up by August 25, one each with Fg Off Duncan MacAdam and Flt Sgt Alfred Meaden, a change from strategic to offensive bombing saw 158 allocate 23 bombers, including *Friday*, to Bomber Command’s first daylight operation against the Ruhr two days later.

Targeting the oil refinery at Homberg-Heerbeck, *Friday* was assigned to New Zealander Flt Sgt Jack Harmer’s crew and they were airborne for more than four hours. Harmer went on to pilot *Friday* on her 61st, 77th and 79th missions to Soesterberg in the Netherlands, the north German coastal town of Wilhelmshaven and the Ruhr’s second-largest city, Essen, on September 3, October 15 and October 23, respectively. Although Meaden captained LV907’s 60th and 62nd raids to La Pourchinte and Le Havre in northern France on August 30 and September 9, both strikes were abandoned due to cloud cover over the target.

By then, LV907 was beginning to show signs of wear, having been in constant use since March 30. Assigned to Fg Off Stanley Rees on September 11 for another strike against Le Havre, a problem with the undercarriage meant the entire trip was flown with it hanging down partially. While the mission had to be abandoned three hours after departing due to the target becoming obscured, the extra drag

**BELOW:** ‘*Friday the 13th*’ at a snowy Lissett in early 1945. Note the yellow stripes visible on the port fin – these were added in mid-1944 to aid in unit identification during daylight operations

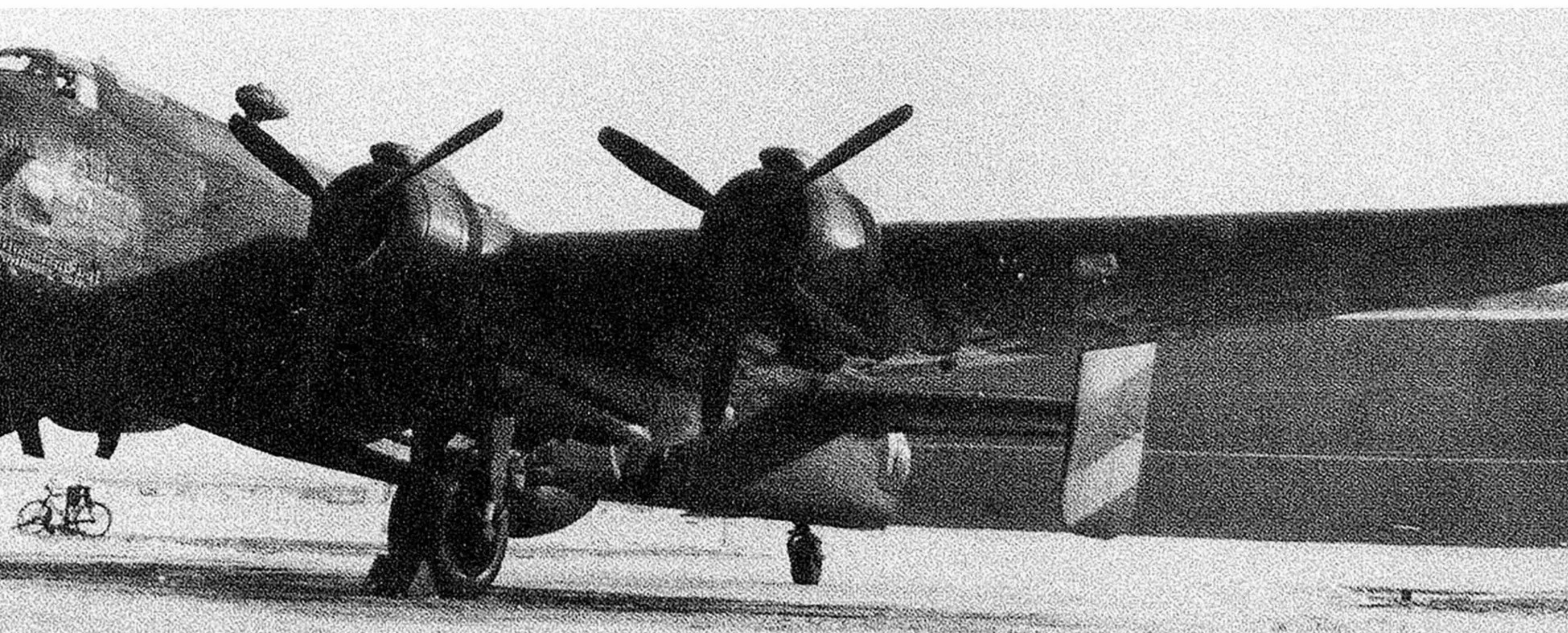
caused LV907’s fuel consumption to skyrocket and Rees ordered bombs to be jettisoned as they turned for home.

With the problem fixed, Waterman (then a pilot officer) guided *Friday* on the first of two successive daylight strikes against the synthetic oil plant in the German city of Gelsenkirchen. While LV907 returned from the first unscathed, she was peppered by flak during the second, but the damage was deemed minor and quickly repaired. With Waterman completing LV907’s 68th and 69th missions with strikes against targets in the German and French port cities of Kiel and Boulogne-sur-Mer, he and his crew needed just seven more to complete their tour. Two days later, Waterman eased *Friday* back into Lissett on three engines after the port outer failed on route to Neuss, Germany. For the second time, Waterton jettisoned bombs into the sea.

Soon back in the air, just two more missions were flown that September, both to Calais, the first with Sqn Ldr Arthur Salter and the other with Waterman.

### Rugged survivor

As autumn approached, LV907’s tally continued to rise, with eight missions flown between October





**RIGHT:** 'Friday the 13th' catches the eyes of Londoners while on display outside the bombed-out wreck of the John Lewis store on Oxford Street as part of the Victory in Europe celebrations in June 1945

**BELOW:** Armourers, fitters, and riggers pose with 'Friday' at Lissett in the days following an unprecedented 128th operation. The success of any bomber unit depended on the efforts and determination of groundcrew, who often toiled around the clock in all weathers

6-25, including strikes on the heavily defended industrial Ruhr cities of Bochum, Duisburg and Essen, the last of these in the hands of the next regular pilot, Canadian Flt Lt Norman Gordon. On October 21, *Friday* was assigned to Kiwi Fg Off Thomas Sinclair for a raid on Hanover, but the attacking force was recalled in the air.

By the time Waterman, by then a flying officer, and his crew flew their 26th and final mission in LV907 on October 28, *Friday* boasted 80 mission marks, but many were wondering how long she could continue. The following day, Gordon and his crew – navigator Flt Sgt James Murray, flight engineer Sgt Arnold Hawthorn, bomb aimer Fg Off William Peters, wireless/air gunner Sgt Thomas Little, mid-upper gunner Sgt John Hyde and tail gunner WO Lawrence Pye – took *Friday* to Zoutelande in the Netherlands. Departing at 1014hrs, they dropped their bombs at 1201hrs. With Murray noting their arrival back at Lisset as 1345hrs, LV907 was grounded for major servicing, a rare occurrence in Bomber Command. At that time, most bombers averaged 40 operational hours, but *Friday* had



flown more than that in October alone.

In her place, Halifax NR190 was put into service as 'NP-F', flying five sorties with Gordon. She was repainted as 'NP-T' on LV907's re-entry to service and failed to return from a strike on Hanover on January 5, 1945. On November 29, Gordon's crew resumed their association with *Friday*, completing a near four-hour trip to Essen. Six more raids were flown between November 30 and December 20 – one each with Sgt Robert Kaye to Duisburg and Fg Off John Compton to Hagen, and four with Fg Off John Robinson, who narrowly avoided a burst of fire from a night-fighter near Soest. Norman Gordon then racked up LV907's 90th mission with a late afternoon strike on the German city of Koln on December 21.

### Unbeaten

Three days later, *Friday* was among 21 aircraft dispatched for a daylight raid on the airfield at Essen-Mülheim. While outbound, the port outer engine's boost dropped and the Halifax almost

immediately began to lose height and speed. Turning for home, John Robinson gave the order to jettison bombs – they landed at 1519hrs.

With three more trips seeing out the year, taking LV907's mission total to 94, Robinson was at the controls on January 1, 1945, for a successful strike on the Dortmund-Ems canal. On landing back at Lissett, many began to wonder if *Friday* might be the squadron's first aircraft to complete a century of missions. Two 158 airframes that could've clinched the title ahead of *Friday* – HX356/NP-G *Goofy's Gift* with 73 and LV940/NP-J *Just Jake* with 82 – had both been lost in accidents on November 8 the previous year. But *Friday* kept coming back – four strikes to the heart of the Ruhr between January 2-16 (three with Gordon and one with Canadian Fg Off Norman Tilston) took the tally to 99.

Five days later, Gordon, then a flight lieutenant, pulled *Friday* into the air at 1848hrs for a strike on Gelsenkirchen. Arriving over the target four hours later, she dropped bombs through 10/10 cloud and turned for home. With Gordon easing LV907 down at 0032hrs, *Friday* taxied towards the waiting crowd with her flag flying. Accompanied by much celebration, a particularly proud Jack Wicks applied a 100th bomb mark. Soon after, Gordon said: "We always feel absolutely confident in her – she flies right, always gets there!"

While some believed it was time for LV907 to be retired, there was no room for such sentiment with war still raging. With Germany almost on its knees, Bomber Command redoubled its efforts on what remained of the







enemy's industrial base. A week after achieving her century, *Friday* and Gordon were back at it with a six-and-a-half-hour trip to attack troop concentrations in the city of Mainz. Then, between February 4-27, *Friday* flew multiple missions (six with Gordon, three with Salter and two with Kaye), clocking up an incredible 62hrs 40mins.

A similar pattern followed in March. *Friday* added 13 missions to her tally with trips to as many different German cities: Cologne with Fg Off Arthur Elley on March 2, then Kamen, Chemnitz, Essen, Dortmund, Wuppertal, Homberg, Hagen, Witten, Recklinghausen and Rheine with Gordon between March 3-21 and Fg Off Harold Wheeler flying to Gladbeck and Munster on both March 24 and 25.

At this point, LV907 had flown an unprecedented 124 missions. Some of these were relatively uneventful, but Gordon was forced to divert *Friday* into RAF Lavenham in Suffolk after losing the port outer engine returning from Chemnitz on March 5. He and his crew became the third to complete

their tour in LV907. Completing their final raid on March 21, they had flown *Friday* 24 times.

With the pace of operations slowing as the war in Europe entered its final phase, LV907 flew just three sorties between April 4-18, two with then regular pilot Wheeler and one with Canadian William Dargaval, a flight sergeant who had joined the squadron the previous month.

On April 25, *Friday* was back in action with Wheeler. Departing Lisset at 1447hrs to strike the coastal guns at Wangerooze, the most easterly of the East Frisian islands, *Friday* battled through considerable flak and swerving bombers over the target, to arrive home at 1845hrs. With its 128th bomb mark added just hours later, both *Friday* and 158 had flown their final missions. Less than ten days later, the war in Europe came to an end.

In just over a year, this so-called jinxed aircraft had proved lucky for 161 men from all corners of the globe. For many at Lissett, when *Friday* kept returning safely, she became a symbol of hope.

Officially struck off charge on May 18, 1945, *Friday* was dismantled and taken to London to be displayed outside the bombed-out wreck of the John Lewis department store in Oxford Street as part of the Victory in Europe celebrations. She was then transported to the York Aircraft Repair Depot at RAF Clifton Moor, where, in an act that now seems astonishing given the sentiment attached to her, she was unceremoniously scrapped.

While the real *Friday the 13th* is no more, her legacy is worthily embodied by the incredible Halifax reproduction at Elvington's Yorkshire Air Museum. How the museum came to boast a Halifax is a story that involves 20 years of sheer determination, a hen house in Scotland, the French Air Force, British Aerospace apprentices and a sprinkling of old-fashioned good luck, but that's a tale for another time. ●

**ABOVE:** While '*Friday the 13th*' was unceremoniously scrapped in 1945, its nose art survives today as part of the RAF Museum London's collection Keith Meachem



# BUILDING TOWARDS D-DAY

In this fourth and final article, **Graham Pitchfork** highlights the scale of air operations in preparation for the D-Day assault



**ABOVE:** The Hawker Typhoons of 198 Squadron completed numerous ground attack sorties as the RAF stepped up its efforts to destroy German held infrastructure in preparation for the Normandy landings  
Piotr Forkasiewicz



Within months of the United States entering the war in December 1941, plans for an Anglo-American invasion of Europe began. Joseph Stalin, the Soviet leader, had constantly been pressurising the western Allies to mount a second front and divert some of the German military

might facing his forces fighting in the east.

The importance of undertaking this operation while the bulk of the German effort was engaged against the Soviet Union was fully appreciated. When the British Prime Minister, Winston Churchill, and the President of the USA, Theodore Roosevelt, met at the Casablanca

Conference in January 1943 they agreed on the 'Germany First' policy. However, they knew it would take time to build up a strong enough force to ensure success and this could not be achieved in 1943.

The strategy for invasion was agreed at Casablanca and, in April 1943, plans for Operation Overlord, the much anticipated









**“The strategy for invasion was agreed at Casablanca and, in April 1943, plans for Operation Overlord, the invasion of Europe, began”**

**ABOVE:** The air commanders. L-R: AM Sir Arthur Coningham, AOC Second Tactical Air Force, AVM Harry Broadhurst, AOC No.83 Group and ACM Sir Arthur Tedder, Deputy Supreme Commander  
Author's collection

invasion of Europe, began. It was recognised that air power would be crucial to success, particularly the attainment of air superiority over the beachheads. It was agreed that a fighter commander should be appointed.

The appointment fell to the C-in-C Fighter Command, AM Sir Trafford Leigh-Mallory. It had also recently been decided that the RAF force to support the cross-Channel operation should be re-named ‘Tactical Air Force’ and be formed within Fighter Command (soon to be renamed Air Defence of Great Britain).

The initial plan was approved in principle at the Quebec Conference in August, but air operations in support of Overlord had in effect already begun. In April 1943 the USAAF Gen Ira Eaker had proposed a ‘Combined

Bomber Offensive from the United Kingdom’. Known as the Pointblank directive, it focused on attacks on the Luftwaffe and its supporting industries, and this became the primary task of the USAAF’s 8th Air Force. RAF Bomber Command’s main aim remained the general disorganisation of German industry and attacks against ‘those industrial towns in which there was the largest number of aircraft component factories’.

With air support considered imperative for an amphibious and airborne landing, the planning staff had narrowed the choice of landing to the Normandy coast or to the Pas de Calais region. They recommended Normandy and the Combined Chiefs of Staff approved the Overlord plan in early December with instructions

to proceed with detailed planning.

### **The Air Plan**

The Air Planning Staff recognised that Pointblank was an essential pre-requisite to Overlord and must continue to be given the highest priority. The continuous pounding of industrial centres in Germany by Bomber Command, and of the steady attrition of the Luftwaffe resulting from the US 8th Air Force daylight attacks, were being increasingly felt by the Germans.

Apart from the intensification of the combined bomber offensive, it was recognised that it was time for the combined air forces to begin attacks more closely related to Overlord. The policy issued by the commanders stated: “In the preparatory stage immediately



preceding the invasion, the whole of the available airpower in the United Kingdom, tactical and strategic, will be employed in a concerted effort to create the conditions essential to the assault.”

The overall air plan was issued on April 15, 1944. Among the principal air tasks identified was the need to attain and maintain an air situation whereby the Luftwaffe was ‘rendered incapable of effective interference against the Allied operations’. This had to be done while providing airlift capability for airborne forces, strikes against German naval forces and continuous reconnaissance of the enemy’s dispositions and movements; disrupting their communications and supply channels through air attacks. This wide-ranging support would need to extend beyond the initial landings and cover the subsequent advance of the Allied armies.

To meet these objectives, air operations were planned in four phases to be implemented in the run up to D-Day.

### Research and strategy

Operation Pointblank had achieved considerable success in reducing German air power, particularly its fighter strength,

an essential requirement for the success of Overlord. Pointblank had also done much to reduce German industrial output, disrupt communications and force the enemy to devote increasing resources to the defence of the German fatherland.

Allied fighter sweeps had aimed at reducing the Luftwaffe by engaging its fighters in the air and attacking airfields. One of the most important results of these operations was the evacuation of many of the enemy’s airfields in range of the south coast of England. It meant enemy fighters would not be immediately available in the event of an invasion.

Finally, the reconnaissance squadrons had done immensely valuable work. Initially, the selection of Normandy was only made after prolonged air reconnaissance of the whole of the Western European coastal belt. Once the decision to land in Normandy had been made, many sorties had to be flown over an extended period so that complete cover could be obtained to produce a detailed catalogue with all the data on the enemy’s defences in the area. The whole of the European coastline from Brest to Den Helder had been



photographed and target dossiers produced.

In February 1944, nearly 100 small areas in Normandy were photographed to identify suitable advanced airfield sites for use after the invasion. In March, the focus was far more widespread with beaches, ports, coastal batteries, airfields, radar sites and bridges being photographed.

Photo-recce aircraft flying at high level with survey cameras allowed an enormous photo-map

**ABOVE:** USAAF bombers pound the Messerschmitt factory on April 24 during Operation Pointblank  
Author's collection



**LEFT:** German soldiers scatter as a photo-recce aircraft sweeps over the beach defences  
Author's collection



of the whole invasion area to be prepared. Others, flying at wave-top height, took photographs of the coast as seen from the sea to allow the study of gradients and obstacles on assault beaches.

Much of this work was done to allow strategic decisions to be made. Producing all this photographic intelligence had to be continued until D-Day to detect changes. Without the preliminary reconnaissance, a successful assault would have been impossible.

Before leaving the initial phase, it is important to stress the importance of security and deception. Although the German High Command must have anticipated an invasion of Europe sometime during 1944, it was crucially important to keep them guessing. Elaborate deception plans were developed, and air operations had to be mounted across a wide area. It has been estimated that for every sortie flown in the Normandy area, two were mounted to other possible assault areas, particularly the Pas-de-Calais region.

### Operation Crossbow

In effect, the preparatory phase commenced at the beginning

of March. It was intended that as D-Day approached the air attacks would be increasingly directed to the invasion itself. No assault could be undertaken if the enemy enjoyed any local air superiority, therefore Pointblank remained crucially important. However, there was a great deal of other work needed before the invasion armada was launched. The number of requirements was too much for the Tactical Air Forces alone, so it was agreed that heavy bombers were to be called on when necessary, even if targets were tactical. In addition to airfields and aircraft production facilities, this involved attacks against railway communications, coastal batteries, Operation Crossbow (V-1) sites and naval targets.

At this stage, no dates were laid down for attacks against coastal batteries and naval targets, but attacks on radar establishments were to start a month before D-Day and those on airfields in range of northern France three weeks before the invasion. Operations against Crossbow sites had to be undertaken whenever possible since they posed a great threat to the Allied assault and to southern

England. Attacks against the launching ramps (given the name 'ski sites') increased during early 1944. By the end of May, 103 sites out of 140 had been destroyed. However, the Germans made their sites simpler and more difficult to detect so the campaign against the Crossbow targets still had many weeks to run.

Finally, air reconnaissance was intensified to monitor enemy dispositions, movements, and construction tasks. It was re-emphasised that the overriding necessity remained that two-thirds of all the air effort had to be directed *away* from the Normandy area to avoid disclosing Allied intentions.

### 'Train-busting'

The key to the success of the Allied landings was the ability to establish a secure and strong beachhead to allow the necessary force levels to be landed for the follow-up operations. In addition to gaining local air superiority and landing in strength, it was essential that German reinforcements could not reach the area quickly and

**RIGHT:** The Chambley marshalling yards under attack on May 1, 1944  
Author's collection







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## “The whole of the available airpower in the UK, tactical and strategic, will be employed in a concerted effort to create the conditions essential to the assault”

in sufficient numbers to repel the invasion. In January, the Allied Expeditionary Air Force (AEAF) Bombing Committee had identified the French railway system as a key element that the Germans would have to use to reinforce the invasion area.

The capacity of the French and Belgian railway systems to carry traffic was to be reduced to the greatest possible extent by bombing. It had been recognised that the best method of destroying the railway system was to attack the maintenance and repair facilities, and this was to be the first phase. As D-Day drew nearer, a tactical phase was to open with railway and road centres, plus bridges and rolling stock being attacked to paralyse all movement in and around the invasion area.

Seventy-five railway targets were identified. A trial of the plan

was carried out on the night of March 6/7, when 261 Halifaxes and six Mosquitos of Bomber Command dropped 1,250 tons of bombs on the railway centre at Trappes, near Paris. The results were dramatic, and the centre was out of action for a month. On April 15, Gen Eisenhower's Deputy Supreme Commander, Arthur Tedder, issued the 'Transportation Plan' and informed both MRAF Arthur 'Bomber' Harris and USAAF Gen Carl Spaatz that their forces would be needed.

The destruction of railway facilities gathered pace during April and May and most of the selected targets were attacked. A growing paralysis crept over the system in the north of France. To complete the dislocation, it was necessary to complete the rest of the plan: to bomb the Grande Ceinture system circling Paris,

attack the chief railway centres in the Loire area, destroy locomotives and rolling stock, and cut bridges across the rivers Seine and Loire.

The 8th Air Force bombed railway centres in western Germany and the Grande Ceinture around Paris was almost destroyed. Bomber Command hit major centres at Tours, Angers and returned to Trappes. The Saumur Tunnel was smashed using huge Tallboy bombs. By the end of May, 51 of the 80 targets were damaged to such an extent that no further attacks were needed. A further 25 were very seriously damaged but some vital installations remained intact. Almost 22,000 sorties had been flown and 66,517 tons of bombs dropped.

By May 21, the damage was so severe it was assumed any trains still running must be of military

**ABOVE:**  
Armourers of 245 Squadron load 500lb bombs on to a Typhoon at Westhampnett  
Air Historical Branch





**“In the months preceding D-Day, hundreds of Allied men and machines were lost in the seemingly endless battles fought over northern France”**

**ABOVE:**  
Mitchells of 98  
Squadron bomb  
the Noball sites  
in the Pas de  
Calais region  
Author's collection

importance, so clearance was given to attack locomotives and rolling stock to complete the disorganisation of the enemy's rail communications. Fighter sweeps and 'train busting' missions were organised on a very large scale. The results were impressive with USAAF fighters attacking trains in Germany and the Tactical Air Forces heading for Belgium and France. Fighters flew over 4,000 sorties on these missions.

As a result of the destruction to the railway network and the loss of so many locomotives and rolling stock, aided by the work of the French Resistance, movement by rail became extremely difficult, slow, and dangerous. Much had to be carried out at night with long detours and a great deal of traffic had to be transferred to the inadequate road system,

which soon became congested. This had a major impact on Germany's ability to marshal a decisive counter offensive after the Allied landings.

The concluding phase of the plan, which began on May 24, was the destruction of all the rail and road bridges to isolate the assault area. The task was given to the fighter bombers of the 2nd Tactical Air Force (TAF) and the USAAF 9th Air Force. By June 6, all 24 bridges between Rouen and Paris were blocked with 18 destroyed. A further 12 major bridges along possible German reinforcement routes had been destroyed.

The intensified attacks completed the isolation of Normandy and the Pas de Calais regions. The Transportation Plan had been a major success and paralysed the railway network. Ultimately,

it made a huge and essential contribution to the success of the Allied landings.

### **Coastal defences and radars**

While the Transportation Plan was the most important element of the pre-invasion phase, there were other very important targets. Given its potential to inflict great damage on the invasion fleet, the need to attack the huge coastal defence batteries was widely recognised.

The concrete casements of many of the batteries were still under construction and this presented an opportunity for attacks. However, for high-flying bombers, these were pinpoint targets and Harris was against using his force. The Bombing Committee disagreed and insisted on the matter being put to the test. This was done on



the night of April 9/10 when the Le Grand Clos battery near Le Havre was attacked, but it was difficult to obtain meaningful results.

Although inconclusive, and despite Harris' repeated objections, it was decided that the attacks should be made even if there was only marginal success. The number of bombs needed even for limited damage was enormous. Ten days before D-Day the Allied Expeditionary Air Force (AEAF) had dropped 5,000 tons and Bomber Command 3,600 tons on coastal batteries. Post-war analysis indicated that 30% of the coastal batteries were so extensively damaged that it was unlikely they would have been able to operate effectively. The bombing both delayed further construction and was very successful in reducing efficiency of the batteries.

On the final night, 1,000 Halifaxes, Lancasters and Mosquitos attacked ten batteries in the invasion area. It was claimed that only four batteries were active during the assault, and these were subjected to naval bombardment.

One of the greatest obstacles to a successful invasion was the existence of the enemy radar chain extending along the Western European coastline. The chain was so extensive that not all sites could be attacked. However, it was essential to prevent the chain from functioning at any considerable level of efficiency. The anti-radar plan was based on a combination of air attacks and radar countermeasures (RCM).

Installations that were unsuitable for electronic jamming and those that could report on shipping, be used for directing coastal batteries or endanger the airborne assault, were all scheduled for destruction. As with all the other operations, for every target attacked in the invasion area, two were attacked outside.

The attacks were delayed as long as possible giving the enemy the minimum of time to repair

or replace damaged installations. Attacks on long-range early warning systems began on May 10. A week later, attacks commenced against the night-fighter control stations and on installations controlling coastal batteries. During the last week, an intensive series of attacks was commenced on 42 sites.

Attacks were carefully tailored to fit the task. Most were carried out by rocket-firing Typhoons of the 2nd TAF with Spitfires dropping bombs and using cannon against these very heavily defended targets. Many had to be attacked at very low level against intense anti-aircraft fire and losses were heavy. However, despite the casualty rate, the losses were not in vain. The pilots' courageous efforts delivered great results. All six of the long-range reporting systems south of Boulogne were destroyed before D-Day and 15 others rendered unserviceable.

Thus, there were large stretches of the Channel coast without radar cover, and it was estimated that less than 20% of the radar apparatus was working. In some areas it was even less.

### Striking the airfields

The Luftwaffe had suffered heavy losses during the Pointblank campaign and had been forced to deploy an increasing number of fighters to defend the fatherland. However, the planners believed that an obvious invasion of the continent would inevitably evoke a significant response from the Luftwaffe and plans were prepared to counter this potential threat. However, by May, it seemed likely that the Allies would enjoy air supremacy.

Nevertheless, airfields in Belgium and northern France could be used by the Luftwaffe to mount an offensive against the invasion. As an insurance

**BELOW: A**  
Mosquito of 464  
Squadron attacks  
the rail yards at  
Soltau  
Air Historical Branch





against this possibility, a plan was devised to destroy all aircraft maintenance and repair facilities on main airfields within a radius of 150 miles of Caen. This was to be followed by attacks on runways, hangars, parked aircraft, control centres and airfield installations at a late stage of the preparatory phase of operations.

Attacks began on May 11 against 40 fighter airfields within range of Caen and against 59 bomber bases in north-west Europe. Thirty-four airfields were attacked before D-Day, the majority by the USAAF but Bomber Command and 2nd TAF also participated.

### Eyes in the sky

The air reconnaissance squadrons had been busy long before the Overlord plans had even been formulated. Once the air operations for the preparatory phase were in full swing in March, there was a significant increase

in reconnaissance activity. It was important to monitor the German forces and their disposition, photograph the work on defensive measures and identifying targets for the attack units, but there was now an increasing need for photographs to assess battle damage on targets.

Photographs were taken of beaches and their exits, of airfields or possible sites for airfields after the landings, dropping and landing zones for the airborne forces, camps, supply dumps, gun emplacements, communication centres, strong-points, headquarters, and many other kinds of military installations. Many of these required the aircraft to fly at low level over heavily defended targets. For this work, the aircraft were fitted with oblique cameras.

Up until April most of the reconnaissance tasks had fallen to the RAF. No 34 (Reconnaissance) Wing had

been placed directly under the control of HQ AEAF but later it was transferred to 2nd TAF. The RAF's 106 Group at Benson and the USAAF met much of the strategic requirement.

### In support

Finally, mention must be made of the important part played by the fighter forces based in the UK and by aircraft of Coastal Command.

It was crucial to defend the invasion assembly areas. The air intelligence staffs did not believe the Luftwaffe could mount any large-scale attacks but measures to meet such attempts nevertheless had to be prepared. There was a series of sporadic strikes early in 1944 but by April they had dwindled and by the middle of the month it was realised that little was to be feared from aircraft operating by day. Night attacks were considered more of a problem and 17 night-fighter squadrons were allocated.

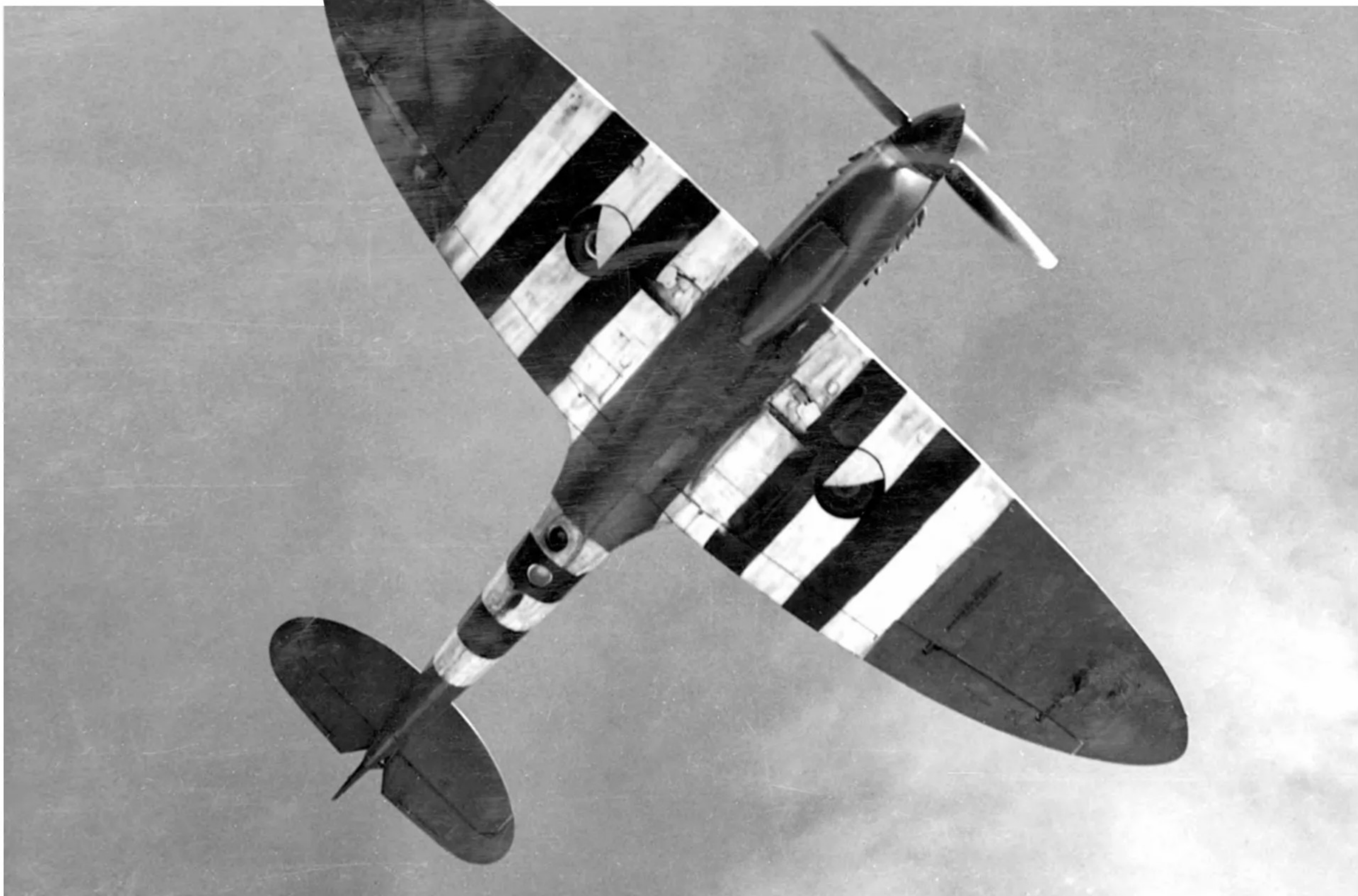
Enemy reconnaissance aircraft posed a greater threat and standing patrols were mounted far out into the Channel to intercept them. A few got through but the irregularity of their post-flight reports did not allow German intelligence staff to appreciate the scale of Allied capabilities and, more importantly, the likely area of an invasion.

For weeks during the preparatory phase, Coastal Command aircraft had been very active in the Bay of Biscay, English Channel and off the Dutch coast. During the planning phase it was thought likely that U-boats would make a determined effort to cut all communications between England and France and that destroyers and the very capable E-boats would assist them. A reduction in U-boat activity early in 1944 suggested they were being gathered in anticipation of an Allied invasion. Some 200 submarines were thought to be available.

**BELOW:** The Merville gun battery was attacked on May 28. This photograph was taken by a 541 Squadron Spitfire  
Author's collection







## “It was essential that German reinforcements could not reach the area quickly and in sufficient numbers to repel the invasion”

Coastal Command's task was to maintain a continuous day and night patrol over the western end of the Channel on a line from Portland to Jersey. Similar patrols, although less dense, were mounted in the eastern approaches on a line from Foreland to Calais. Sufficient aircraft were to be on patrol to ensure that no U-boat or surface vessel could pass through undetected. Beaufighters of the RAF's Strike Wings mounted patrols to attack any E-boats. The planners saw these operations as 'putting the cork in the bottle'.

These anti-Kriegsmarine operations were highly successful and there was minimal interference with the invasion fleet. More than 5,500 anti-U-boat and anti-shipping patrols were flown in three months

and on June 5, 51 squadrons of Liberators, Sunderlands, Catalinas and Wellingtons, assisted by the Fleet Air Arm and the US Navy, were maintaining the 'cork patrols' and 11 Beaufighter units were standing by to attack surface ships.

### Ready for the assault

Even during the final few days before the beach assault, air strikes against coastal gun batteries, radar sites and the French railway network continued at a high tempo. Overall, nearly 200,000 aircraft had flown on Overlord missions in the two months leading up to the invasion and almost 200,000 tons of bombs, plus other munitions, had been dropped.

Crucially, the deception

element was maintained, the forthcoming battle area had remained isolated, and overall air superiority was preserved.

In the months preceding D-Day, hundreds of Allied men and machines were lost in the seeming endless battles fought over northern France, but when hundreds of aircraft took off during the late evening of June 5, the preparatory work for the greatest invasion in history was complete.

The first air operations in support of the assault commenced as soon as the convoys sailed, and the air war moved into a new phase. The Normandy landings' success would be measured by the achievements of those setting out, and those who followed, on the re-conquest of Europe. ●

**ABOVE:** Spitfire PR.XIs of 541 Squadron were in constant action during the build-up to D-Day and during the operations in Normandy  
Author's collection



# DESERT DREAM

The team behind Buccaneer XX900 has returned the jet to the scheme it wore in 1977, as **Jamie Ewan** reveals



t's definitely unique!" beams Lee Parker, crew chief on Blackburn Buccaneer S.2B

XX900, as he shows me a picture of the jet while we're sitting in his office at Davidson Aviation, located at Leicestershire Aero Club. The image shows XX900 repainted in a slightly bizarre 'nearly all-over' desert camouflage scheme. "We chose the scheme a long time ago," he reveals, "but what makes it even better is that it's authentic to XX900 – it actually carried this scheme."

Looking out the window, it's clear that Mother Nature has scuppered any chance of jumping into a Cessna to fly up to Tatenhill in Staffordshire to

see the jet in person. "Bloody weather," I mutter.

## The road to the 'hill

The fifth from last S.2B to roll off Hawker Siddeley Aviation's Brough production line in East Yorkshire, XX900 flew for the first time on October 22, 1976. Delivered to 208 Squadron at RAF Honington in Suffolk a month later, it went on to serve across the Buccaneer fleet for the next 17 years. Seeing out its service with 208 Squadron, albeit in 12 Squadron markings, at RAF Lossiemouth in Morayshire, it undertook its last flight on April 6, 1994, when it landed at RAF St Athan in South Wales to await disposal. It was saved from the scrapyard by David Walton, adding it to his then expanding

British Aviation Heritage – Cold War Jets Collection at Bruntingthorpe. XX900 was resident at the Leicestershire base for the next 26 years, regularly performing anti-deterioration and fast taxi runs until the airfield was leased out for open car storage in March 2020.

While the situation at 'Brunty' remains a hotly disputed subject, the team had to look for a new home – one where they could stretch XX900's 'legs' and carry out the needed anti-det runs every six weeks or so. "The long-term survival and operation of '900 was paramount," says Lee. "At the time, I was working at Tatenhill, about 60 miles away from Bruntingthorpe, where

**BELOW:**  
Desert dream:  
Blackburn  
Buccaneer  
S.2B XX900  
resplendent  
in Red Flag  
colours on  
November 19  
last year  
Lee Chapman







there was plenty of space and a near 1,200m runway. It was perfect. We approached David Walton and got permission to move her there, which we did using a low loader on November 6, 2020.”

The move cost an eye-watering £14,500, funded by donations, following which the team got back to work keeping the near 50-year-old jet in ground running order and taking on the massive task of repainting it. “When we moved XX900, it was wearing the same scheme it had when retired from service. After nearly 20 years of being exposed to the elements at ‘Brunty’, it was looking a bit worse for wear.”

## New colours

With some of the pilots local to Tatenhill agreeing to sponsor the application of primer and David Walton generously funding the topcoats, the team announced that XX900 was to be repainted in April 2022.

“We’d decided on the paint scheme about 18 months earlier, but kept it under wraps,” Lee says, smiling. “We wanted authentic colours that XX900 wore in service, but one unlike any of the other surviving Buccaneers. So, along with Dave

Walton, we decided to repaint XX900 in the temporary, ‘nearly all-over’ desert camouflage scheme it received with 208 Squadron for 1977’s Red Flag exercise at Nellis Air Force Base in Nevada. Just four of 208’s ten Buccaneers were finished in the scheme exclusively for the exercise.”

With work starting in earnest in May 2022, the team spent countless arm-aching hours sanding and degreasing the years of accumulated hydraulic fluid and engine oil, as well as removing the general clag stuck to the jet’s surfaces. Then Steve Maltby began to add the two-tone sand and dark earth

camouflage. Lee says: “With the work finished in November 2023, we unveiled XX900 in the new livery on November 19 and the response has been superb.”

Looking as good as it did almost 50 years ago, when flying at more than 600mph, just 20ft above ground, while evading aggressor aircraft flying combat air patrols above and missile sites below, I can’t help but agree with Lee.

Ironically, it was determined that the type’s strengths as a flying machine – and not its colours – were what gave the Buccaneers such an advantage during Red Flag. Read Graham Pitchfork’s revealing account of the exercise, starting on page 86. ●

**ABOVE:**  
The XX900 team work on the jet at its Tatenhill home in May 2022  
Buccaneer XX900



**LEFT:**  
After some 20 years at the mercy of Mother Nature, XX900 - seen here during one of its final taxi runs at Bruntingthorpe in 2018 - looked slightly worse for wear  
AirTeamImages-Europix



# RED FLAG: ENTER THE BUCCANEER

Former Buccaneer squadron commander **Graham Pitchfork** describes the RAF's extraordinary success during the early Red Flag exercises

## BELOW:

To match the Mojave Desert landscape, many Red Flag aircraft were repainted in a wrap-around sand and green colour scheme although the rear fuselage sections retained the previous grey/green pattern. Here Buccaneer XV352 is shown carrying two Carrier Bomb Light Stores 100's, each carrying two 28lb practice bombs

Andy Hay-Flyingart

**D**uring the mid-1970s the United States armed forces conducted a study to address the lessons learned from the Vietnam War. It demonstrated that 'unseasoned' combat aircrews suffered unacceptably high loss rates while showing low operational effectiveness. Indeed, the first ten missions were the key to a crew's survival in war. This should not have come as a surprise since Luftwaffe General Adolf Galland had written in his World War Two memoirs: "A steadily increasing percentage of the young inexperienced pilots were shot down before they reached their tenth operational flight.

As training courses in the Luftwaffe were cut it soon became more than fifty percent."

The USAF decided to provide an operational training facility, which could reproduce those early war sorties and, in 1975, Exercise Red Flag was born at Nellis Air Force Base near Las Vegas in the Nevada desert. The tactical weapons and electronic warfare ranges to the north occupied an area that would cover the southern half of England and Wales, and they included 50 different types of life-size targets against which aircraft were allowed to deliver live weapons from any direction using any delivery mode.

Targets included a battlefield, formed with 220 replicas of Soviet tanks deployed in realistic formations, and there were two truck convoys – one of them, no less than 17 miles long, was spaced in the same manner as a Soviet convoy. Airfields had been scraped out of the Nevada desert to the exact pattern of those located in eastern Europe and aircraft were parked in dispersal areas. Dummy and real missile sites had been constructed. There was even an industrial complex with rail access, complete with a train.

## Blue and Red

Visiting squadrons formed the attacking 'Blue' force and were







**LEFT:**  
En route to  
the range  
with the radar  
jamming pack  
pod on the  
wing pylon  
via author

opposed by the 'Red' forces, comprising many different surface-to-air missile (SAM) and anti-aircraft artillery (AAA) systems built to simulate the main threats posed by the Warsaw Pact forces. These included most of the Soviet systems and only the missiles and bullets were missing from the simulations but, through the medium of video-camera recorders, many aircraft were 'shot down' by SAMs and 23mm and 57mm AAA.

The final threats posed by the Red forces were the air defence fighters, controlled by a Soviet-style Ground Control Interception (GCI) network. A special squadron of 'Aggressors' was established and permanently assigned to Red Flag. Other USAF combat fighters supplemented them, and gun-sight film was used to assess 'kills.' Crews who had a validated 'kill' *against* them became candidates for a combat survival scenario the following day, on foot in the desert.

In early 1977, the USAF's Tactical Air Command invited the RAF to participate in a Red Flag exercise and the air staffs decided to send ten Buccaneers and two Vulcans as the first non-US participants. As 208 Squadron was the only overland Buccaneer unit that practised air-to-air refuelling, it was decided that they would ferry their aircraft to and from Nellis. All 208 Squadron crews and four from 237 OCU



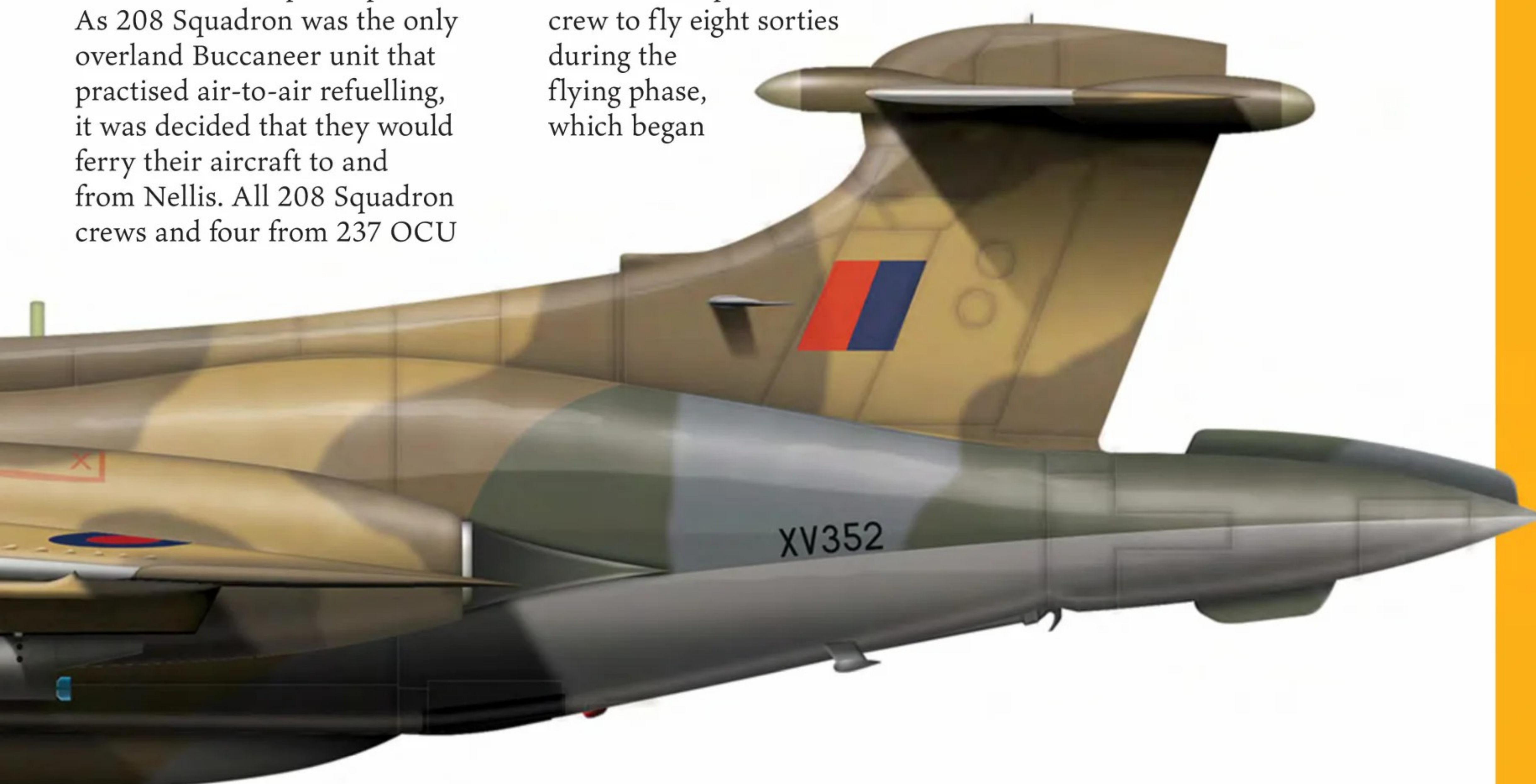
participated in the first two-week period and crews from XV and 16 Squadrons took over for the second period. Ten Buccaneers left Honington on August 2, 1977, in pairs, to rendezvous with Marham-based tankers en-route to Goose Bay for an overnight stop, before taking off for Nellis the following day. After four days of acclimatisation, the exercise started.

### Combat

Red Flag exercises began on a Sunday with briefings to cover the planned flying, the scenarios, and the rules of combat. The plan was for each crew to fly eight sorties during the flying phase, which began

the following day with electronic warfare (EW) orientation sorties and allowed crews to listen to the threats on the Radar Warning Receiver (RWR) equipment and to test the effectiveness of the ALQ 101-8 ECM pods. On this sortie, the only one that was unopposed, crews took the opportunity to practise high-energy manoeuvring in the hot and high target area standing some 6-8,000ft above sea level.

The remaining seven sorties were opposed by the Red air and ground threats. At around midday, the Air Tasking Message for the following day's missions appeared. Formation leaders





**RIGHT:**  
The RAF  
Germany  
Detachment at  
Nellis AFB  
via author

planned their co-ordinated attacks against the assigned targets and spent the rest of the day either de-conflicting or integrating with other Blue Force units. This proved to be a very valuable feature of the exercise, allowing crews to review their tactics to fit into a package of sorties rather than operating in isolation, which would never have been the case in a real conflict.

After take-off, the strike/attack forces penetrated 'enemy' airspace, frequently with 60 to 70 aircraft entering the target areas through a series of corridors within a period of 20 minutes. No radio calls were required and clearance to drop live weapons was automatic. Once in the range area, aircraft were constantly under threat from ground-based modern SAM systems, both real and simulated, and from the Aggressor squadron which was equipped with the F-5E fighter. These aircraft were chosen because they looked similar to a MiG-21, and they had comparable performance.

To add to the realism, they were even camouflaged in the exact schemes of the Warsaw Pact,



and their pilots, who spent a full three-year tour in the aggressor role, had been indoctrinated and trained to copy and fly exactly as an enemy fighter pilot would. This allowed crews to fly the precise tactics they would employ in war, rather than the tactics to counter the Phantoms and Lightnings flown by their RAF colleagues – always a temptation when inter-squadron rivalry was at stake, but not representative of war.

### Threats

The ground threats were extremely realistic and provided a unique opportunity to employ

electronic warfare tactics and to use the ECM pod, something that was quite impossible during normal training in the UK. This exposure to the real world of electronic warfare was one of the most valuable aspects of the early Red Flag exercises. Not only did crews learn a great deal about tactics, but the opportunities also provided an excellent spin-off to assess the effectiveness of aircraft systems. Many modifications to aircraft and tactics stemmed from the experiences gained at Red Flag.

The basic tactic for a sortie was to route plan carefully and fly to obtain maximum terrain masking

**RIGHT:**  
Tolicha Peak  
airfield, built  
to simulate a  
Warsaw Pact  
base, was used as  
a target  
via author







**LEFT:**  
Buccaneer S.2B  
XW544 took  
part in Red Flag  
exercises in  
1980. It is now  
preserved for  
fast taxi runs  
at Cotswold  
Airport in  
Gloucestershire  
Jake Wallace



## “It was soon apparent that the ground threats had never faced an aircraft flown so consistently low and fast”

with minimum ‘sky-lining’ over ridges. All the attack sorties were flown in very loose tactical formations of two or four aircraft. Flying as constituted pairs proved to be very valuable with crews becoming almost telepathic and never once using the radio except to call a fighter threat. An increase in jet exhaust smoke or a change of heading denoted a threat, and an appropriate counter was thrown.

Sorties were flown at 100ft to the target using the radio altimeter, listening to the RWR, and concentrating on terrain masking to remain undetected as long as possible while maintaining the ‘timeline’. If threatened, a split was initiated to create multiple problems for the air and ground defences before joining up on the timeline as soon as possible, often as late as the target run.

It was soon discovered that the best defence in the face of an aircraft attack was to run – to turn was fatal. Crews soon recognised the need to avoid turning in the target area, as an aggressor aircraft would locate the bomb smoke and a turning aircraft was easier to spot than one which stayed low and kept on going. The lack of a self-defence weapon was the Buccaneer’s main problem, although 1,000lb bombs dropped from the bomb bay in front of a pursuing fighter proved a useful deterrent.

On each sortie live weapons were dropped from a first run attack. There was complete freedom to choose the mode and direction of attack, speed and release height and there was no range safety officer to interfere at the last moment. Bombing with live high explosive bombs

and cluster bombs provided another unique opportunity and crews had to be extremely precise in their timings to ensure they did not fly into the real fragmentation debris created by the preceding aircraft. It was crucial that their weapon was dropped on time to ensure the following aircraft was safe to attack. This required great discipline and skill, which could not possibly be replicated under the simulated conditions that prevailed during routine squadron training in the UK. It is well known that aircrew like to ‘claim’ they would have had a direct hit and been perfectly on time, but in Red Flag the results provided proof one way or the other.

### Results

At the end of each day’s flying came the mass debriefing,





**ABOVE:**  
A farewell  
'diamond nine'  
flypast at the end  
of the exercise  
for the benefit  
of those on  
the range who  
never saw the  
Buccaneer!  
via author

when some 300 exhilarated but exhausted aircrew assembled in one hall to recount the stories of their missions, tactics, and results. This session was the core of the Red Flag training programme, and many Buccaneer aircrew felt that this was the most valuable aspect of the exercise. It began with the day's Red Force air and ground claims being listed together with the umpires' assessment and, unsurprisingly, claims outnumbered validated 'kills' by about four to one. Each formation leader then gave an account of his mission before the Aggressors recounted their experiences.

The Red Flag staff conceded that 208 Squadron's dedicated low-level tactics achieved results better than they had seen before. At the first mass

debriefing claims were listed, but 'Buccaneer' did not appear. Crew confidence grew each day as no 'kills' were registered against them, and it was soon apparent that the ground threats had never faced an aircraft flown so consistently low and fast. The aggressors found the Buccaneer hard to acquire visually as they received no assistance from their Soviet-styled GCI network that never knew of their presence flying at 100ft. As a result, they pulled in the F-15 Eagle with its look-down radar and the occasional claims were validated.

Without question, the Buccaneer crews came home from Red Flag knowing that, in the Buccaneer, they had one of the world's best operational strike/attack aircraft of its day. At Red Flag crews flew it faster, further, and lower when carrying more than any other participant. It possessed a good EW capability and with a two-man constituted crew it was able to penetrate the defences with gratifying success. Crews returned home confident that if they had to go to war, they could do so effectively. Red Flag was, for everyone, the most exhilarating, demanding and professionally satisfying flying they had ever experienced.

No Buccaneer aircrew that participated in Red Flag would disagree.

The crews also made a significant impression on their USAF hosts and Red Flag 77-9 became the forerunner of annual visits by all types of RAF strike/attack aircraft that continue to this day. The *US Defense and Foreign Affairs Daily* was clearly impressed and headlined the performance of the three Buccaneer squadrons:

"RAF Buccaneers have performed outstandingly well [at Red Flag]. The low-level performance of the aircraft has allowed RAF pilots to show off some of their tactics to USAF counterparts. Some of the tactics have been so 'sharp' that the USAF pilots in the F-5Es have been unable to cope with the Buccaneers at all. Close observers say that some of the tactics adopted by the Buccaneer crews have astounded the USAF who are surprised that an aircraft now some 17 years old can defeat the efforts of such types as the F-5E and F-15 aggressors. To others it is no surprise. The Buccaneer has long been one of the most under-rated aircraft in combat inventories. Its low-level performance has become legendary." ●

**RIGHT:**  
A Red Flag  
Buccaneer,  
sporting a post-  
exercise red star  
underneath the  
cockpit, is seen  
after its return to  
RAF Honington  
via author





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# FULL CIRCLE

**Tom Turnill** shares his fall and rise as a former Cranwell cadet pilot, in a story driven by his love of flying, near misses, and second chances...

**I**t's always difficult to know exactly when the fall began. It certainly wasn't during the mid-1950s while at the RAF College Cranwell in Lincolnshire, where to everyone's amazement, including my own, I came top of my course for flying. And it certainly wasn't through over confidence. I've always flown by the old saying: "There are old pilots and there are bold pilots, but there are no old, bold pilots..."

**Close call, wrong path**

If anything, I was under confident. Moving up the road





to Swinderby to conclude our flying training on de Havilland Vampires, I suffered the worst attack of sinusitis imaginable when descending through cloud in close formation at the end of a sortie. With insufficient fuel to climb again, I was forced to stick to the leader, with hot air from the air conditioning blasting in my face. The pain got so bad, I seriously considered bailing out. But I didn't, and I completed the rest of the course.

Where things really came to a head was at the Hunter Operational Conversion Unit (OCU) at Chivenor in Devon. No-one had told us what happened there, so in

my innocence on the first day I asked an instructor what we were to learn. He replied: "Battle formation, air-to-air gunnery etc." I replied: "We certainly need to know about that."

I later learned that the instructor, either maliciously, or because he hadn't heard what I'd said, translated it into: "Oh, we don't need to know about that!" Well, what did they expect from a cocky Cranwell ex-cadet who'd turned out top of the flying course and thought he knew it all? That became the underlying attitude, which we later learned was the general feeling about former Cranwell officers.

The first part of the conversion took place on the Vampire, where we did indeed practice battle and close formation – including terrifying tail chases where I still have visions of the Vampire's underbelly just inches away. This part of the training made me realise that I was never going to be member of a formation team! Air-to-air gunnery was another part of the training. On one run against a towed banner, I broke off so late that on my return to base the radio aerial under my wing was discovered swinging forlornly. That was a very close shave indeed.

I then suffered yet another attack of sinusitis. To make matters worse, I was due to fly a low-level navigation exercise. With just 35 minutes until we took off, there wasn't nearly enough time to do a proper navigation plan. So, I grabbed a map, ran out to the aircraft and took off at the requisite time. As any navigator will tell you, you must prepare the sortie properly before taking off – but I knew I had to find a turning point, before returning. Visibility was unlimited but could I see it? No, I couldn't! So, I made the cardinal error of continuing in the hope that it would show up. Even I realised that wasn't going to happen, so I turned back. Checking the fuel gauges – all six of them swilling around in front of me – I realised I might



**ABOVE:** A beaming Tom Turnill poses before climbing into the skies in a Boulton Paul Balliol from Cranwell. All images Tom Turnill unless stated

not reach Chivenor. We had been told not to risk forced landings in the Cornish fields because of the unforgiving stone walls, so I made my first, and last, real 'PAN' call to Westonzoyland in Somerset – which had just appeared off my right wing.

Landing a little on the fast side, I managed to stop at the end of the runway and was instructed to exit onto the taxiway, which sloped downwards, and was told to hold to wait for a 'Follow Me' to take me to the dispersal. With hot brakes, the inevitable happened when I put the parking brake on – the brake sacs burst. So, I shut down and had to be towed to the dispersal. I called Chivenor and explained what had happened. Their response was to send an instructor in a two-seat T.11 to collect and return me for an inquisition worthy of the Spanish. "Where did your girlfriend live?" "Cambridge." "Where do your parents live?" "Stamford in Lincolnshire."

I really could not understand why they were so aggressive when I thought I had acted responsibly after finding myself short of fuel – admittedly due to poor planning. They decided to check my abilities to navigate and identify the local landscape by sending me on a trip with an instructor. This went disastrously wrong when I misidentified a clear

**LEFT:** The author in the cockpit of a Vampire FB.9 while learning to fly at RAF Cranwell sometime in 1955







**ABOVE:** The one that got away - a five ship of Hunter F.6s from 65 Squadron soar through the wild blue yonder...

KEY Collection

**BELOW:** Magnificent machines! Meteor T.7s assigned to No.4 Flying Training School await their next sortie at Worksop sometime during the 1950s Newark Air Museum



piece of the Cornish coastline as South Wales! The pattern was becoming clear to the hierarchy – even if I still had hopes of going solo on the Hunters we saw taxiing past every day.

Our course concluded with the ground school exam, of which I came top – again to everyone’s amazement, but then I had no problems with that type of exam. And then we had the simulator, which I handled well until the instructor pointed out that I had missed a crucial red light, stupidly placed by the right knee instead of right in front of the pilot. In the real jet, I would have been in a very difficult situation. Ah well, that’s what the simulators are for!

Then came the crucial part. This was the time when there were no two-seat Hunters. I was told I would be the first on my course to go solo on Monday. Told on a Friday evening, I was

greatly looking forward to the experience as I gathered my flying kit together. Then there was a call for me to go and see the Wing Commander Flying. He didn’t beat about the bush: “Turnill, I think you are going to kill yourself on the Hunter, so I am going to give you two alternatives – go back to Swinderby for refresher training or go to RAF Worksop [in Nottinghamshire] for conversion onto Meteors.”

There was no way I was going back to the humiliation of Swinderby, so I opted for Worksop. He was, of course, correct in his analysis, although I couldn’t see it at the time. I’d never have made it as a day fighter pilot with my navigational inabilities and problems with close formation. This was far more fitting to my abilities than if I’d followed the Hunter path.

During my final interview with Chivenor’s station commander, I made it clear that I’d never made the remarks attributed to me and left with the lasting regret that I’d never had the chance to fly the Hunter... even just once.

It’s ironic that I would later visit Chivenor at the end of my flying career for perhaps the happiest flying experience I’ve ever had. But that’s for later...

### To rise again

After a pretty miserable Christmas, I found myself at Worksop, living in an old Nissen hut for sleeping quarters. With the base a brisk walk away, I reported to the flying squadron on my first day and met Sqn Ldr Brittan who wanted my full history. Cranwell had obviously been in touch but he wanted a second opinion on what had happened at Chivenor. It was clear that I was thoroughly depressed. The instructors did their best to restore some semblance of confidence in my flying abilities.

After the mandatory ground school learning the intricacies of the Meteor, I spent the next two months flying the two-seat T.7 and F.8 – magnificent machines!

While there, I remember walking to the flight on several clear winter mornings and seeing a tiny white triangle floating almost silently ten miles up in the deep blue sky. It was portent of things to come but far from my imagination then. I’m grateful to the instructors at Worksop; they recovered my self-confidence sufficiently to even contemplate flying night-fighters.



During this time I'd been planning to get married and my last action at Worksop was to ask the station commander for permission to do so before I joined the Night Fighter OCU at North Luffenham in Rutland. Officers weren't supposed to marry before the age of 25 and the RAF did their best to discourage it by giving us no marriage allowance and denying married quarters and hirings – 66 years later, we proved them wrong!

At the OCU, the reaction to a young officer living off base was also considered unsatisfactory but Mary and I were fortunate in having a delightful cottage close to the base. She was soon made aware of the vagaries



**LEFT:** A wonderful image captured by the author showing de Havilland Vampire T.II XE937/34 on short final at Cranwell in 1955. Delivered to the RAF in March that same year, it was ultimately scrapped in 1963

associated with a young pilot husband learning a new skill. However, after teaming up with navigator Eric Stafford, we learned the fine arts of detecting and homing onto target aircraft. And with a nav in the back who had a magic

box of tricks I never had to worry about getting lost!

I'd always enjoyed night flying and was fortunate to be competent at instrument flying, and so, apart from one or two hiccups, we completed the course in August 1957.

We were posted to 85 Squadron, initially at West Malling in Kent, and then Church Fenton in North Yorkshire. At the latter, we joined 19 Squadron's Hunters (noted for their reluctance to fly at night!) and 72 Squadron's Meteors – our biggest rivals.

My first squadron commander was Wg Cdr Anthony 'Binky' Binks, a noted eccentric whose favourite bar trick was to light a cocktail and offer it round. He later became officer commanding RAF Alconbury – which was then home to USAF Republic F-100 Super Sabres. While there, he persuaded a young pilot to 'beat up' Church Fenton one lunch time. It resulted in a resident's heart attack, but Binky's career didn't seem to suffer subsequently.

By then, I'd established myself as a reasonably competent night-fighter pilot; however the Meteor was out of date and we were struggling to engage English Electric Canberras, which often had at least 10,000ft on us. And so, after a year, 85 was to be disbanded – and since the few limited spots on Gloster Javelin squadrons were taken by the more qualified pilots, the rest of us were offered either co-pilot on Handley Page Hastings, or a year as a 'co' with the V Force, followed by a captaincy on Canberras.



**LEFT:** RAF Chivenor – seen here from the back seat of a Gnat T.I of the Royal Air Force Aerobatic Team, the Red Arrows, in April 1967 – played a massive part in the author's career

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**ABOVE:** A four-ship of 85 Squadron Meteor NF.14s circa 1957. Despite the '14' being the ultimate Meteor night-fighter it was showing its age by then – the idea of going up against high-flying Soviet bombers 'in anger' seemed a concerning prospect!

**BELOW:** Delivered to the RAF on February 22, 1954, NF.14 WS775 is seen here in flight with 85 Squadron two years later. The author joined 85 at West Malling in August 1957

The latter sounded the better option. So, in late September 1958, with a heavily pregnant Mary, our labrador and all our worldly possessions in the back of our Morris Minor Traveller, we set off from Boston Spa in West Yorkshire and headed to the Valiant OCU at Gaydon in Warwickshire.

Next day, and a quick visit to the Families Officer we were greeted with: "You are under 25, so no quarter or hiring. However, if you go to Leamington Spa, we hear there is a house to rent if you are quick!" This was the other side of the Families Officers we met – they always had something up their sleeves for the likes of us. We never spent more than a day without accommodation.

It was time to learn what made the Valiant work, together with our duties as co-pilots. Then

came my first solo trip with my then captain Frank Stokes. As I was doing the take off calculations, I was called to the phone to be told that my son Nicholas had been born and that all was well. And so, in typical RAF pilot fashion, I completed the sortie before dashing to Mary in hospital.

### From Gaydon to the world

Having completed the Valiant course, we set off from Leamington Spa on a frosty, foggy January 1959 morning, with the addition of a four-week-old baby in the back. Mary's parents' house in Over, Cambridgeshire, was our destination. The next morning I was due to report to RAF Wyton, where I had been posted to join 543 – a photo reconnaissance Valiant squadron, but first we

needed accommodation. The usual response from the Families Officer was accompanied by "We hear that there is a cottage at Alconbury the Americans declined, so if you are quick..."

Ford Cottage by the stream then became our next home, and with Mary and family safely in place, I returned to Wyton to join Gordon Harper's crew.

My interview with the squadron commander was quick and to the point: "The promise of a Canberra tour after one year, will now become a two-year minimum tour as a co-pilot and then, if you are good enough, you might be offered a captaincy on the V Force." No point in arguing, so I settled down as a co-pilot. I often offered to fly with other crews when other co-pilots were sick or unavailable – anything to get into the air and the experience of flying with other captains was invaluable.

The RAF, in its wisdom, realised that co-pilots were missing out on first pilot experience for their logbooks and provided the Station Flight with a de Havilland Chipmunk for their use. Oh the joy of having your captain in the back while weaving and whirling over the Cambridgeshire countryside with the callsign 'Chippy One', asking for clearance to enter the 9,000ft runway and taking off in the first 200, then on occasion letting







**LEFT:** On strength with 543 Squadron, Valiant B(PR)1 WZ394 powers out of RAF Luqa during Exercise 'Medflex Fort' in May 1958. Malta would become a regular destination for the author after joining the squadron the following January  
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them land. It was good to be in charge every so often, even if only for an hour or so.

Gordon was a good captain and ensured we shared take-offs and landings equally. He was also a bachelor and enjoyed the freedom from married responsibilities by volunteering for every 'Lone Ranger' available. 'Lone Rangers' enabled crews to fly overseas to a wide range of destinations on their own and took place in addition to the squadron's many photo-recce deployments. El Adem in Libya, Nairobi, Salisbury in Southern Rhodesia, and Offutt Air Force Base in Nebraska became regular destinations. These were invaluable in giving me the experience of travelling around the world. With regular month-long 'sun spot' detachments to Luqa in Malta, we also visited RAAF Butterworth in Malaya twice in two months to survey Thailand.

For Mary, now living in a lovely cottage in the small Bedfordshire village of Pertenhall, the only perk of these overseas visits was a box of Noritake china from Singapore and boxes of Cypriot fruit. Meanwhile, she cared for Nicholas and our labrador Shandy, who chose to deliver a fine litter of eight puppies while I was away, yet again, in Malaya. The litter was planned, the visit to Malaya wasn't.

After 18 months as a co-pilot, I completed my left-hand seat

conversion on type. Eventually, my time as a 'co' was up and it was time to be considered as a captain. Well, there were no spots in Valiants or Victors in 3 Group, but 1 Group was short of Vulcan captains. That couldn't have been better news as far as I was concerned as I'd always admired the graceful lines of the Vulcan and its fantastic performance.

### Like a 'Homesick Angel'

The now familiar route to squadron acceptance via the

OCU at RAF Finningley in South Yorkshire, where I met my future crew, took place, as always seemed to be the case, during the winter months. And I soon became used to the weekend journeys to and from Pertenhall via the A1!

The ground school passed quickly, though the sim proved interesting – unlike the Valiant, there was only one set of throttles between the two pilots. I had to get used to flying left-handed while in the left-hand seat, and vice versa in the right.

**BELOW:** The author took this image while conducting a 'Lone Ranger' to Embakasi in Nairobi. Note the Lufthansa Boeing 707 and a United States Air Force Douglas C-124 Globemaster II that can just be made out in the background







**RIGHT:** A crew scramble to their Vulcan during an exercise – something Tom Turnill and his crew were tested on day and night after joining the UK's Nuclear Deterrent Quick Reaction Alert force with 44 Squadron at Waddington in 1961

KEY Collection

This would become a regular requirement when I became an Instrument Rating Examiner (IRE). Unlike the Valiant, the Vulcan handled like a fighter rather than a bomber and it was a joy to fly. With its more powerful Rolls-Royce Olympus engines it leapt off the ground in half the distance of the Valiant, while its huge wing gave it incredible manoeuvrability at height, as many an English Electric Lightning 'jockey' found to their cost when trying to keep up with us.

Our American cousins also found that the 'Big Delta' could slip through the valleys during the annual bombing competitions much more easily than lumbering Boeing B-52s. The Vulcan's huge wings also gave it excellent slow speed handling characteristics, requiring none of the high lift devices, like flaps, to improve either its take-off or landing performance. In fact, it rarely needed its brake parachute – as I was to discover on a 'round the world' trip in 1971 when I only used it once in 17 landings, and that was to ensure the groundcrew didn't have to unpack it at the end of our trip!

Having completed the OCU, we set off for RAF Waddington to join 44 (Rhodesia) Squadron – this time with infant Claire. With various acceptance checks completed, our crew was soon declared Combat Ready and joined the UK's Nuclear Deterrent as one of the unit's four Quick Reaction Alert (QRA) crews. With each stint lasting 24 hours, we had to be capable of getting airborne within 15



minutes of an alert. As such, we regularly practiced and our reaction times were put to the test both day and night. Typically, the Bomber Controller called us to either cockpit readiness ('Readiness 05'), or 'Readiness 02', which meant starting the engines and taxiing to the runway threshold to prepare for either a scramble message or to stand down.

Although we had live nuclear or thermonuclear weapons on board the alert bombers, we never flew with them in peace time. That said, we regularly flew with drill weapons on countless dispersal exercises that saw all swarms of V Force aircraft flying to airfields around the country so that a

strike wouldn't wipe out our nuclear deterrent in one swipe. The nearest we came to having to deploy in earnest was during the Cuban Missile Crisis of October 1962 which mercifully was resolved peacefully.

During the succeeding years, I became established as the squadron's IRE as well as a regular display pilot. Often being asked to take an aircraft around the country for displays, the latter was great fun. Our crew was always part of the regular four-ship scramble demonstrations put on for VIPs and airfield open days. This squadron experience gave me back my self confidence as a pilot, but promotion was not forthcoming.

In 1965 we left Waddington for Cranwell, where I became a Ground Flight Commander on B Squadron Cadet Wing at the RAF College. It was familiar surroundings and after a year of sorting out cadets' problems, I was called by my wing commander (who was also my old boss on 44) saying he couldn't understand why I hadn't been promoted. Well,

**BELOW:**

The author moments from landing in Avro Vulcan B.2 XL392 at Luqa during one of his regular 'trips' to the Maltese base as part of the UK's V Force





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**ABOVE:** A rare view of a 2 AEF de Havilland Chipmunk T.10 on final to Hurn

he should have known if anyone should!

Later, he rang to say that I was to be promoted in January... provided I accepted an overseas unaccompanied post for a year. I knew that these were now being handed out on a regular basis and chose Goose Bay in Canada – I knew the type of aircraft using it and it was only a ‘hop’ back across the Atlantic if I got leave. This was hard on Mary and the family, who became established in the station commander’s quarters in the RAF Headless Families Station at RAF Wartling near Bexhill-on-Sea in East Sussex – but as always, she accepted it without a murmur of complaint.

As operations officer at Goose, it was my task to greet and brief V Force crews on their low-level sorties, something I had done myself on 44 Squadron. The highlight was cadging a lift on a VIP de Havilland Comet staging through to Washington with the then foreign secretary and joining him for breakfast on the way. He was kind enough to say I could return with the crew to the UK the next day, and so I was able to have a brief week’s respite with the family before returning on a ‘trooper’ via Gander in Newfoundland.

The reward for this tour was a place at the RAF Staff College at Bracknell – something I’d been pushing for ever since I qualified on Valiants. The course itself was a disappointment since I had been expecting something a little less mundane. However,

the compensation at the end, was a tour on Vulcan B.2s at Waddington – but this time as a flight commander on 50 Squadron. I’ve detailed what that entailed in another article (see *Delta Driver* in the February 2023 issue) so won’t repeat it here. But suffice to say that we completed what was to be my final operational tour with a trip around the world, a display in New Zealand and the award of a rare ‘Command’ status for me and my crew presented by the Air Officer Commanding 1 Group. This was the final accolade to complete the rise after the fall – but it wasn’t the end of my flying career.

While trying to keep myself sane at the Defence Operational Analysis Establishment in

West Byfleet, another pilot suggested I might apply to an Air Experience Flight (AEF) to give air experience to young cadets. The AEF at Hurn, today’s Bournemouth Airport, was to become a haven for me, flying Chipmunks over the delightful Dorset countryside. During the summer breaks I did the same over the Scottish mountains from Kinloss and Lossiemouth – sheer heaven.

Ironically, my final summer camp was at Chivenor, floating over the Devon countryside. The very last one I took up was a young lass who had never flown before and I was therefore forbidden to do aerobatics for fear of frightening her. After 15 minutes she pleaded to be shown some aerobatics, so I gave in and did a gentle wingover. She was ecstatic and asked to be shown a loop, and then a barrel roll! When I landed and came to a halt, she exclaimed with real pleasure: “Oh Sir, that was wonderful. Thank you so much.” And that gave me as much pleasure as all the flying I had ever done. The depths and the heights of my flying experience came full circle at one RAF Station – Chivenor. ●

**RIGHT:** Steely eyed Chipmunk ‘driver’ – seen here while undergoing flying training at Cranwell during late 1953, the author ultimately ended his flying career on the indomitable de Havilland type



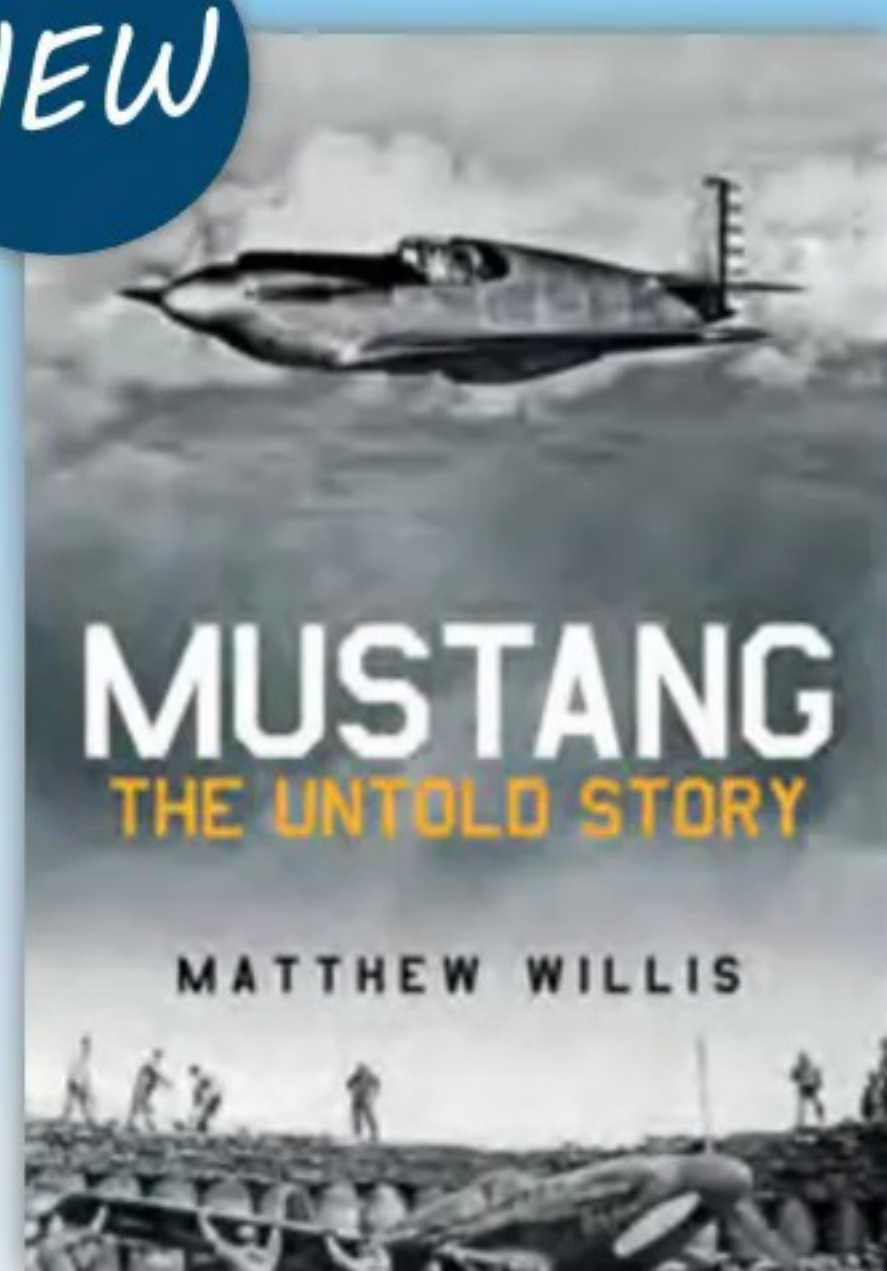


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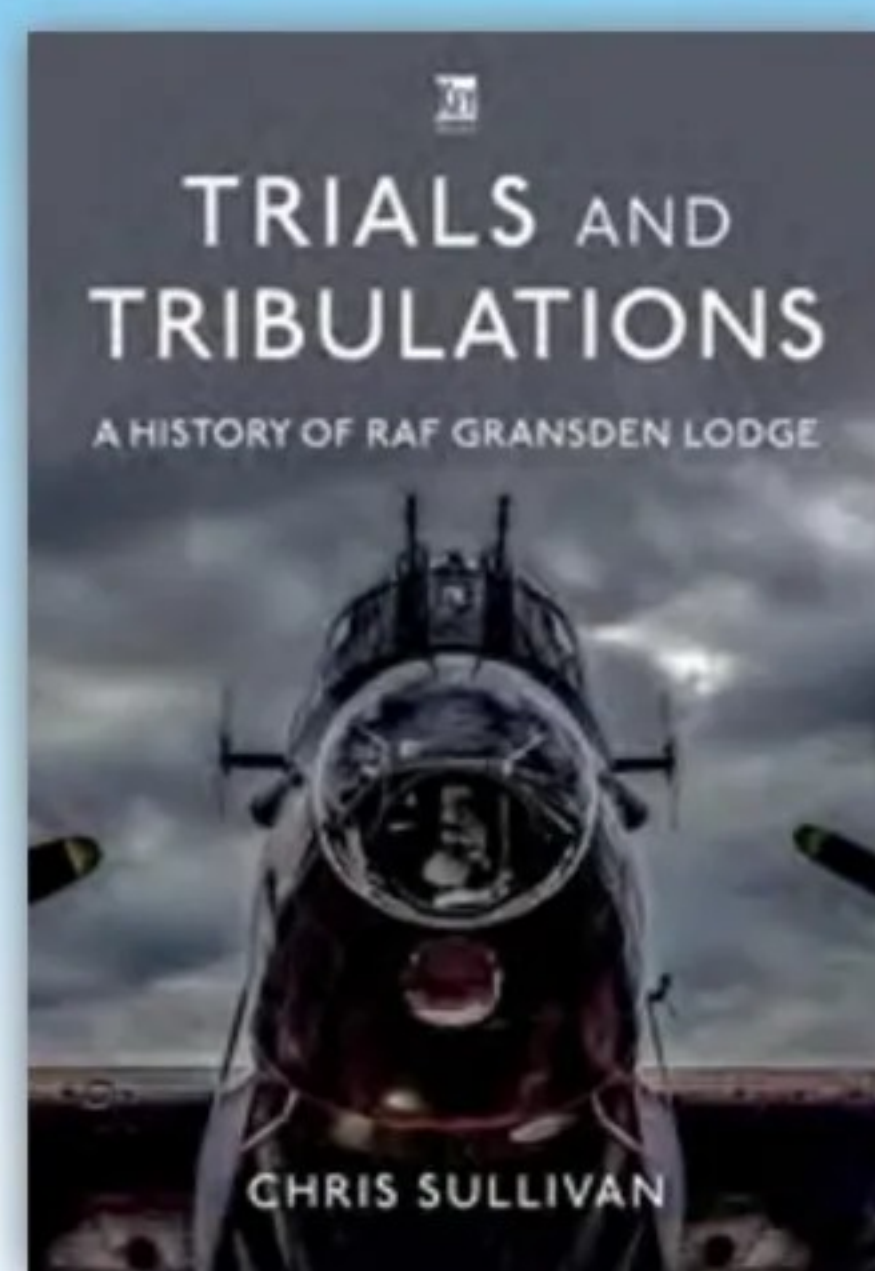


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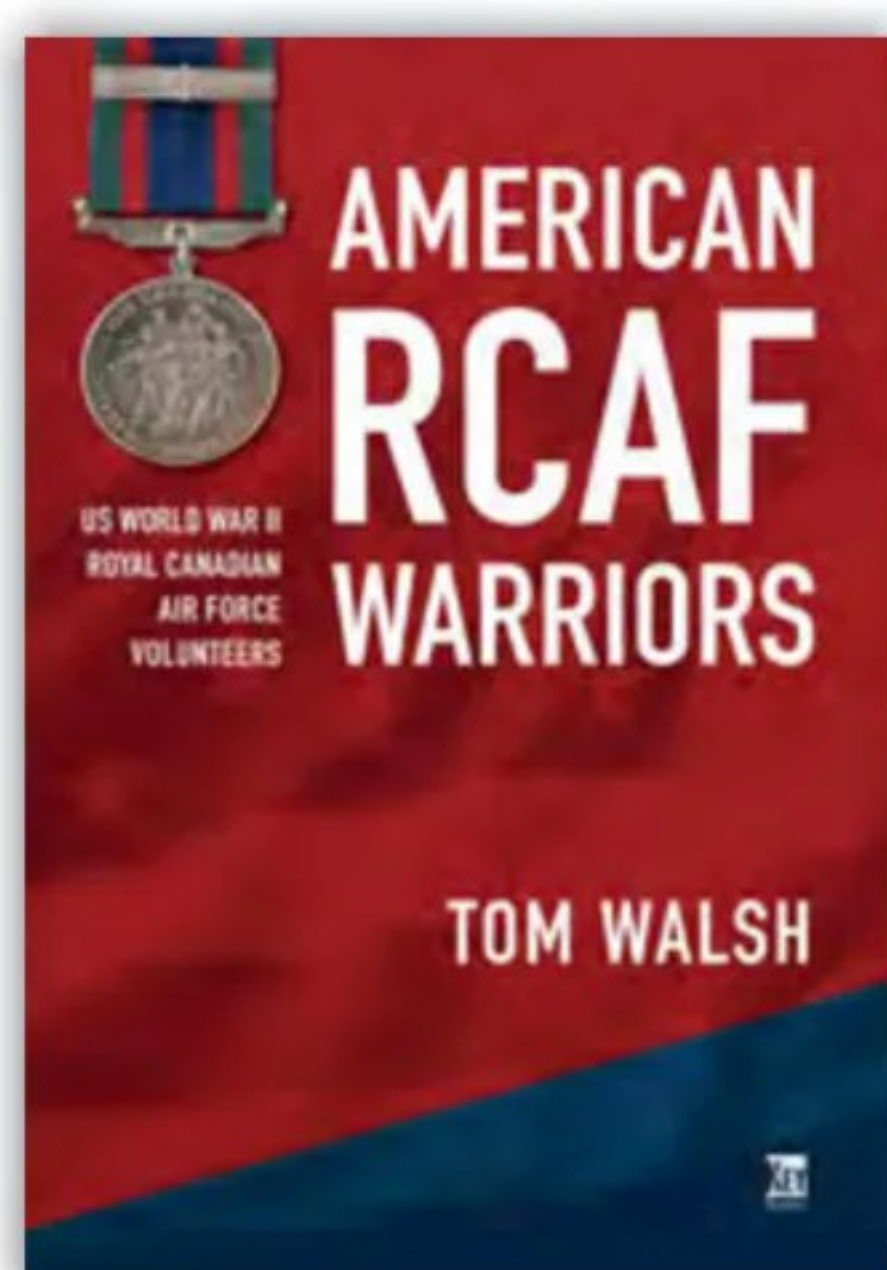
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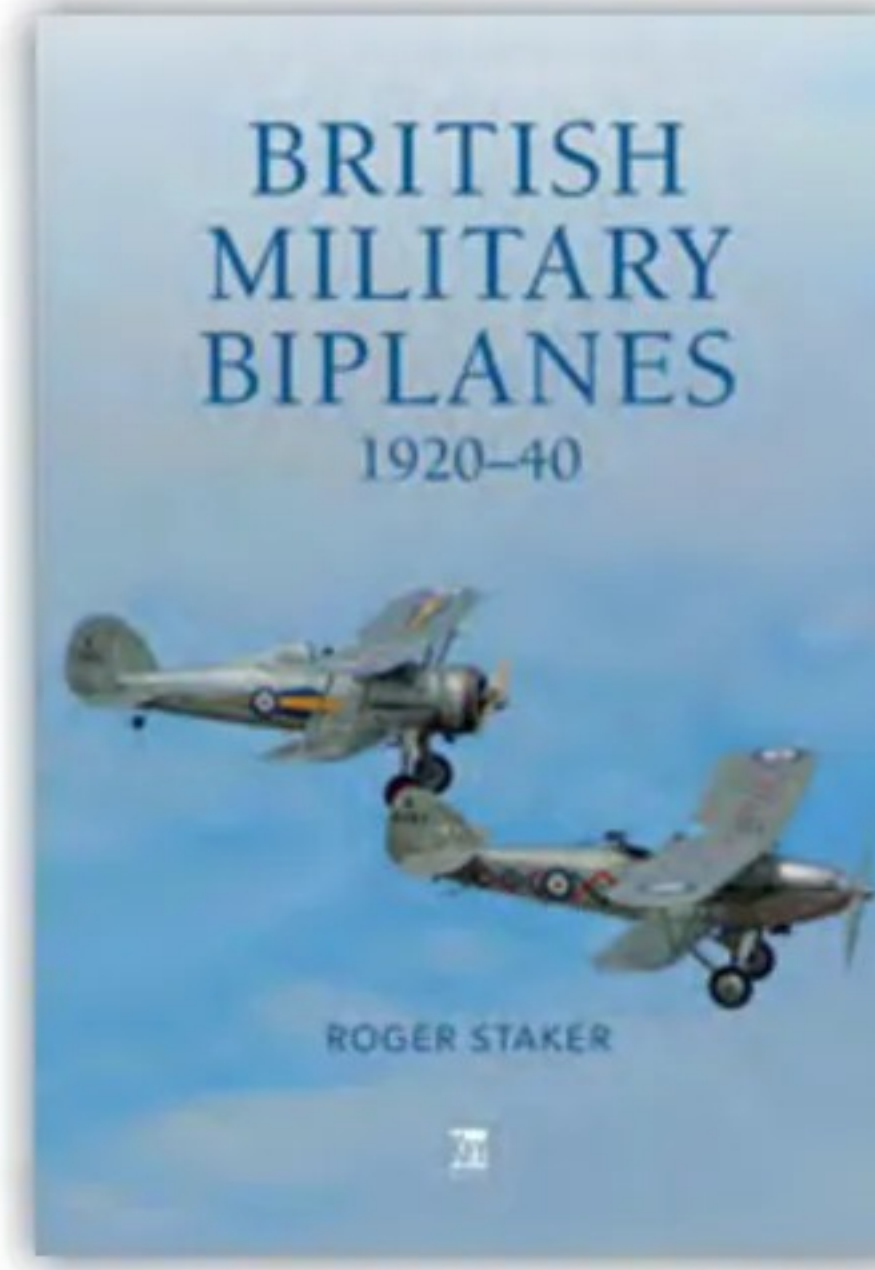
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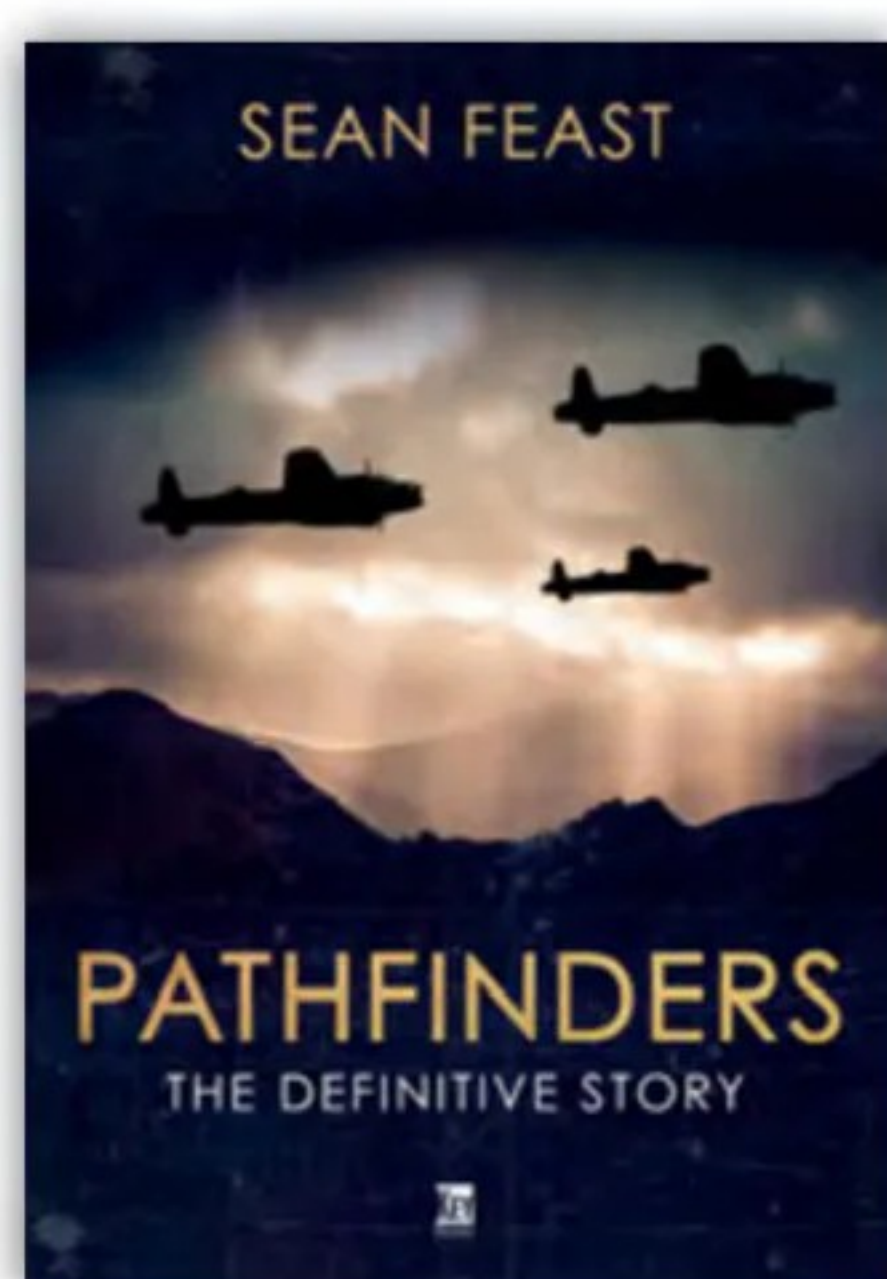
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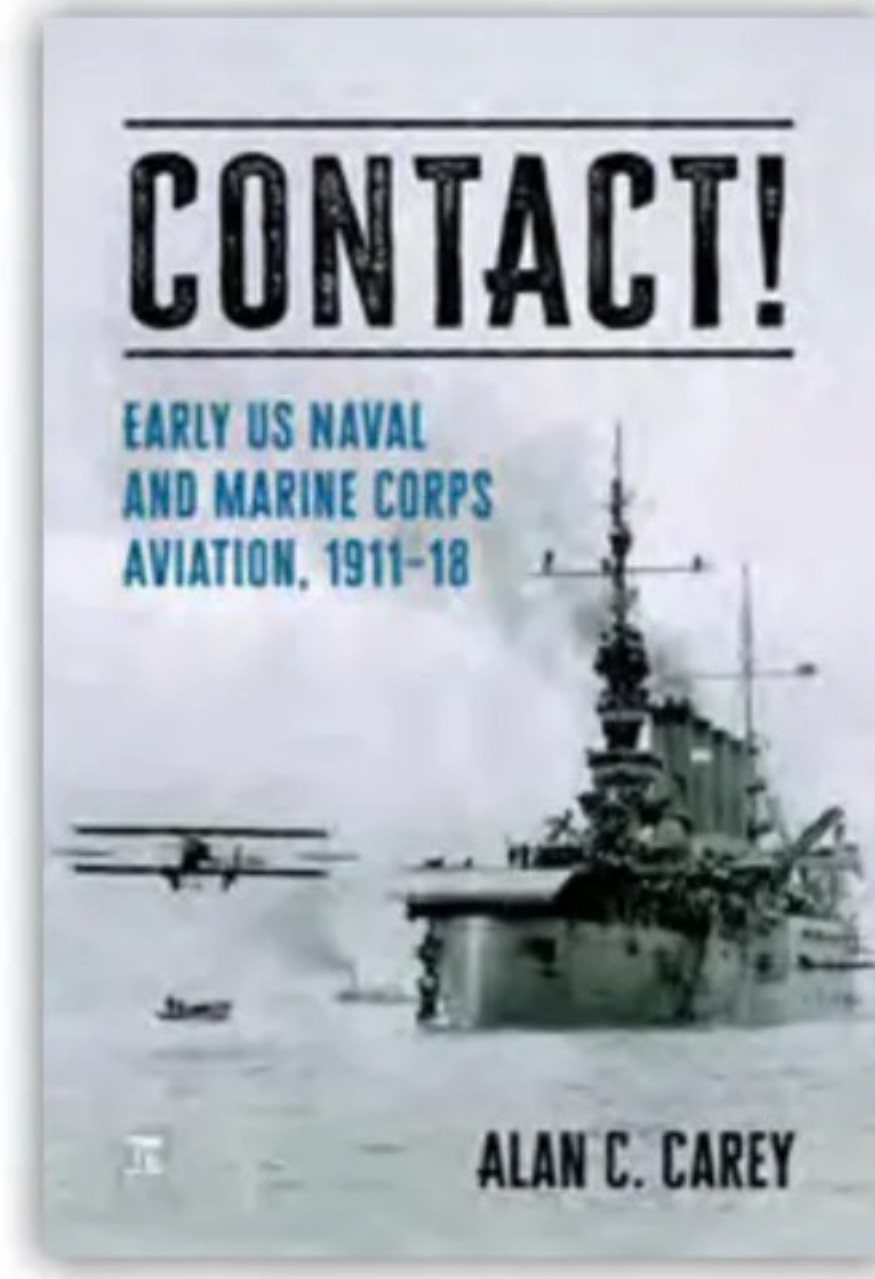
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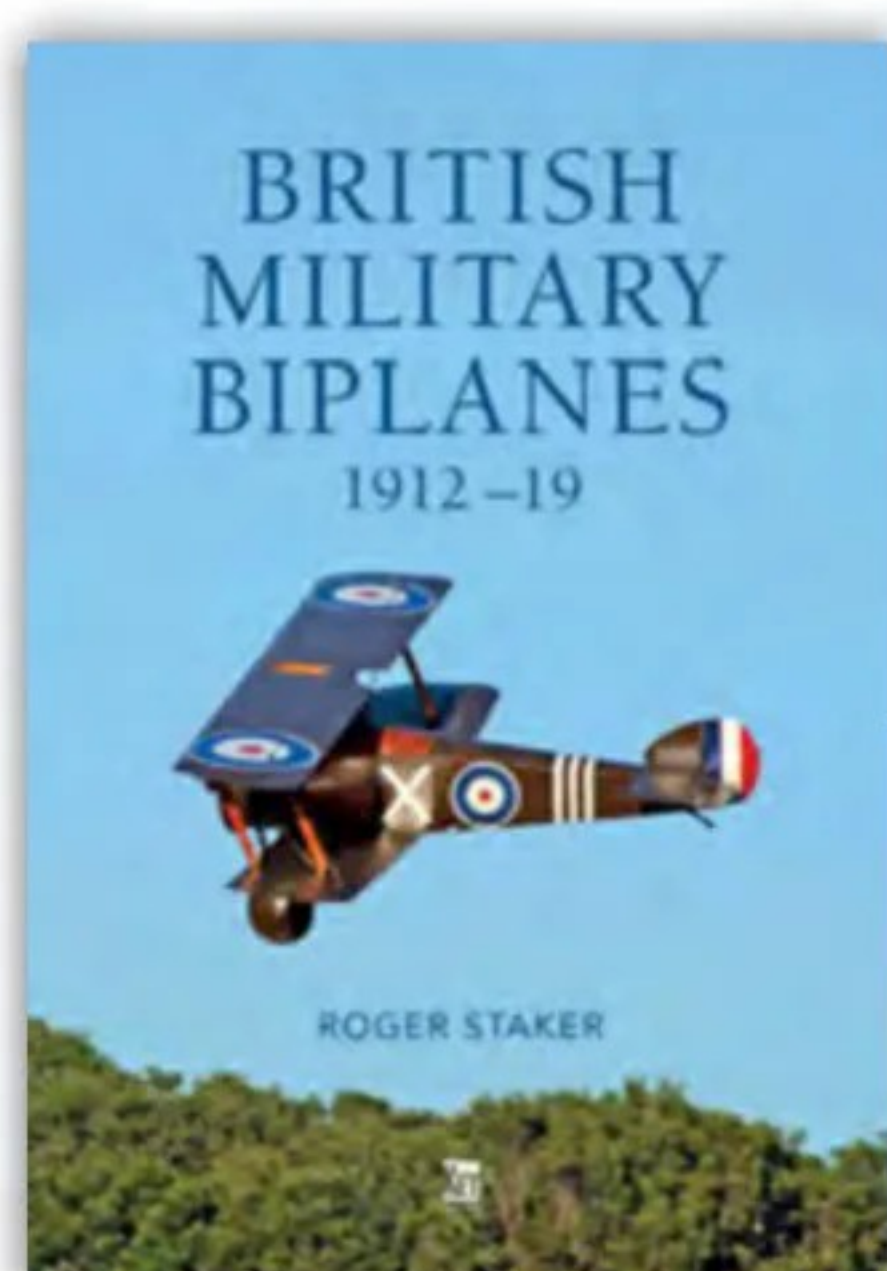
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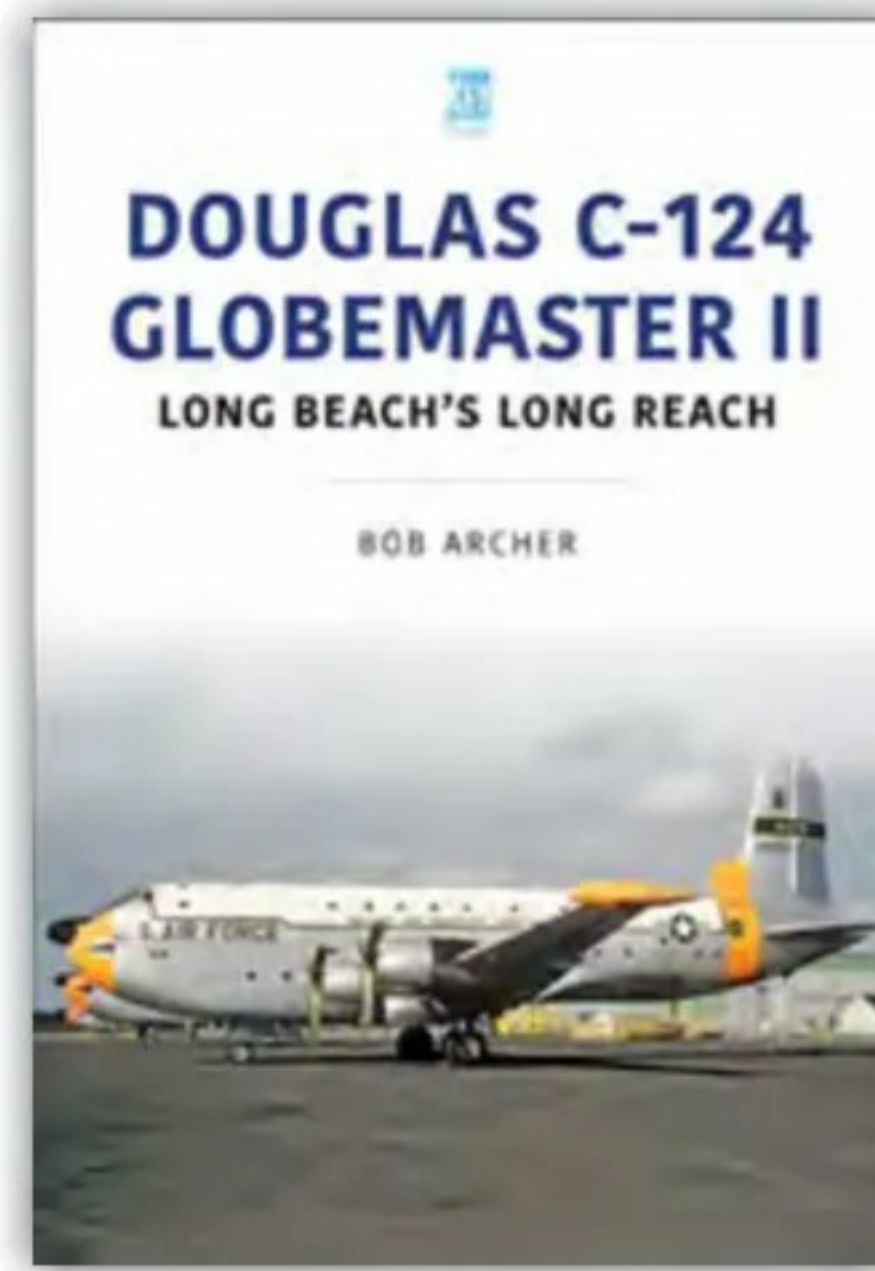
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# ITALIAN TRIO

A unique formation team featuring classic Fiat G.46 trainers has been formed in Italy. **Simone Bovi** and **Gabriele Orlandi** tell its story

**RIGHT:** A magnificent view of the G.46 team on its way to Fairford last year *Aviation Photo Crew*

**C**omprising three distinctive Fiat G.46 military trainers, the Italian G.46 Team made its UK debut at 2023’s Royal International Air Tattoo (RIAT) last July.

The eye-catching type was developed in the 1940s, the

prototype flying for the first time on June 25, 1947. The Italian Air Force operated them until 1960, but in more recent times, following a plan instigated by G.46 I-AEKA owners Silvia Sorlini and Giovanni Marchi, a three-aircraft formation team has been established. The team is completed by Mario Cotti’s G.46

I-AEKT and Claudio Coltri’s I-GIGE. The aircraft owned by Silvia and Giovanni is also part of the Museo Volante (Flying Museum) private collection in Ceresara, Mantova.  
“The idea was in mind a few years ago as we tried to create a flying formation with a different aircraft model, but without





**LEFT:** Standing from left: Silvia Sorlini, Giovanni Marchi, Mario Cotti, Francesco Dante, Claudio Coltri and Andrea Colombini. Front: Massimiliano Coser and Giulia Marchi Sorlini

Gabriele Orlandi





The Italian G.46 Team

Aircraft	Year built	Pilots
G.46 3B I-GIGE	1950	Francesco Dante, Claudio Coltri (owner),Andrea Colombini
G.46 4B I-AEKA	1951	Giovanni Marchi, Silvia Sorlini
G.46 4A I-AEKT	1952	Mario Cotti (owner), Ivan De Boni, Massimiliano Coser

during the late 1940s to promote the armed forces.”

Going public

Before displaying to the public, the G.46 pilots did of course undergo a strict period of training during which they were assisted by military pilots with aerobatic flying experience. After gaining the necessary skills and confidence to fly effectively in formation, the team began to appear at airshows in Italy, such as that at Pratica di Mare Air Base near Rome, which was staged to mark last year’s centenary of the Italian Air Force.

The opportunity to attend RIAT was a prospect too good to miss. They completed their journey to Fairford, in Gloucestershire, in three legs, during which the air-to-air photographs on these pages were captured. One of the

RIGHT: The Fiat three-ship flying over a patchwork of fields Aviation Photo Crew



RIGHT: In close formation – I-GIGE (nearest camera), with I-AEKA and I-AEKT Aviation Photo Crew

success,” said Silvia, reflecting on the team’s origins. “We did not give up and with passion we started to work on something which we could bind to our Italian heritage. This [the G.46] is an aircraft which on the one hand was used to train hundreds of military pilots but was also used by the Pattuglia della Giovinezza (Youth Flying Team), a military formation created



RIGHT: The three aircraft pictured in Italy last May Gabriele Orlandi







### Type history

Developed shortly after World War Two, the type was adopted by the Italian Air Force for training purposes. Built in five series of single-seat A models, the Fiat was initially equipped with the Alfa Romeo 115b engine, replaced on the second series by the de Havilland Gipsy Queen 30. Largely built of light alloy, the G.46 featured taildragger retractable landing gear, an elliptical fuselage and a cantilevered monoplane wing. Between 1948 and 1950, around 70 aircraft were commissioned by Argentina, Syria, and Austrian air forces with another 50 used by Italian flying schools for basic training. Due to the high cost of maintenance, the G.46s were swiftly replaced by more sustainable aircraft. At the time of writing, the three aircraft flown by the Italian G.46 Team are the only airworthy examples of the 'breed'.

**“Attending RIAT meant that enthusiasts from all over the world got to know us and see the work we have done so far”**

pilots, Francesco Dante, recalled: “We wanted to get the best from these well-preserved aircraft, and last year we finally managed to participate in some remarkable airshows in Italy and abroad. We were invited to attend RIAT and after three stops we finally reached our destination where we parked our aircraft for the static display. This meant that enthusiasts from all over the

world got to know us and see the work we have done so far.”

The team continues to be financed by nothing more than its own personal resources and of course the passion of the aircraft owners. It's a triumphant example of what can be achieved when there's determination and desire. Instagram users can follow the team's activities on its official page: [pattuglia\\_g46](https://www.instagram.com/pattuglia_g46) ●



**TOP:** Low over The Channel – a memorable sight from the cockpit of G.46 I-AEKA  
Silvia Sorlini

**ABOVE:** An evocative morning view of the team preparing for action on July 18, 2023  
Silvia Sorlini

**LEFT:** “With passion we started to work on something which we could bind to our Italian heritage”  
– Silvia Sorlini  
Gabriele Orlandi



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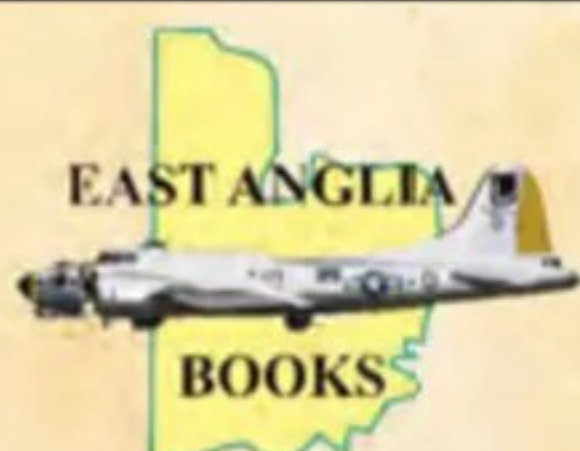
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# RICHES IN RIO

Brazil might not seem an obvious destination for the aircraft enthusiast, but the South American nation is steeped in aviation history, and is home to one of the world’s finest museums, as **Richard Vandervord** discovers

**RIGHT:**  
C-47B 2009 is displayed with 6° ETA markings under the port wing. This was the first of over 80 examples supplied to FAB  
All images Richard Vandervord







**A**sk anyone in Brazil who invented the aeroplane and there's a good chance they won't immediately credit the Wright brothers. They might well tell you that the aircraft's true innovator was Alberto Santos-Dumont. The Brazilian aviation pioneer and *bon viveur* became famous for his dirigible balloon flights around Paris in 1901, and then undertook public demonstrations of his kite-like 14-Bis powered aircraft in 1906.

Some might very controversially make the claim that the achievements by Orville and Wilbur Wright at Kitty Hawk in 1903 do not count as they were not publicly witnessed, but whatever the veracity of that, there can be no doubt that Brazil is endowed with an extremely rich aviation heritage. Aircraft have been bought from many countries for both military and civilian use, while additionally many indigenous designs have given excellent service, culminating in the emergence

**ABOVE:** Painted to represent an aircraft of the Esquadrilha da Fumaça (Smoke Squadron), this Fouga Magister was acquired from France and was No.196 in Armée de l'Air service

**LEFT:** The Brazilian Air Force operated 89 Curtiss P-40s from 1942 onwards – the badge on P-40N 4064 translates as "I'll answer you bye"



**RIGHT:** Gloster Meteor F.8 4399 (later 4460) was the last to be operated by the Brazilian Air Force, and the only one to be given a camouflage scheme



**RIGHT:** The Xavante was Embraer's licence-built version of Aermacchi's proven MB.326 design. This is one of 182 produced



of multi-billion-dollar aerospace manufacturer Embraer, now the world's third-largest producer of airliners.

### Worth the wait

The concept for a national Brazilian aeronautical museum can be traced back to 1943, but a suitable site was not determined until 1974. It was only then that work began on the restoration of the buildings and hangars of the Air Academy at Campo dos Afonsos, established in 1914 and known as the Cradle of Military Aviation in Brazil. It's situated

some 20 miles (30km) to the west of downtown Rio de Janeiro. At the same time, the collection and restoration of aircraft, engines, weapons and other pieces of historical value began in earnest.

The Museu Aeroespacial (Aerospace Museum), known as Musal for short, opened at Campo dos Afonsos on October 18, 1976 and is administered by INCAER, the Instituto Histórico-Cultural da Aeronáutica of the Força Aérea Brasileira (FAB). Since its foundation, it has amassed one of the foremost historic aviation collections in the world, with some

genuinely unique exhibits among its compliment of over 140 aircraft and a vast array of artefacts.

One such item is a propeller from Graf Zeppelin, removed while the airship was suffering engine vibrations on one of its 64 services to Rio in the mid-1930s. The propeller is said to have been 'spirited away' by a German engineer on board who later took up residence in Brazil.

### Unique collection

On arriving at the museum gate, identity checks are carried out at the guardhouse, with free-of-charge entry between 9am and 4pm from Tuesday to Sunday via the exhibition building at the far end of the line of hangars. The five display halls are interconnected in a long line, and the aircraft displayed inside are positioned in rows on either side of a central walkway. Pleasingly for the aviation enthusiast, the spacing of the aircraft is broadly favourable for photography, with a minimum of clutter and reasonably good lighting.

The entrance building contains exhibition galleries on two floors, illustrating the early history of aviation in Brazil, together with

**BELOW:** This Vickers Viscount was one of two operated by the FAB's GTE on presidential flights from 1957







way through the Cold War era, from Gloster Meteor to Dassault Mirage, from Grumman Widgeon to Albatross and from Douglas C-47 to Embraer Bandeirante. Interspersed among these are several light aeroplanes and trainer types, many of indigenous Brazilian design.

**LEFT:** Although marked as 6529 (which was scrapped in 1978), this is really Grumman Albatross 6534, first delivered to the USAF in 1950 as 49-079

### Behind the scenes

When consulting lists of the wide variety of aircraft in the museum's care, it will be quite apparent to those in the know that only a proportion are on public show at any given time. During the author's visits in September 2022, only around half of Musal's aircraft complement were in the display area. The airbase has extensive hangarage beyond the public zone where restoration and storage take place, and a number of significant airframes were sadly but understandably absent from public display, including a very rare example of a twin-engine Focke-Wulf Fw 58 Weihe [Harrier].

This particular airframe was built in Brazil and is in the company of many other tantalising types such as a Curtiss C-46, de Havilland DH.89 Dragon Rapide, Douglas A-20 Havoc and B-26 Invader. Also present are a Gloster Meteor T.7, Hawker Siddeley HS.125, Lockheed P-80 and T-33, North American F-86 Sabre and a Westland Wasp.

Another important machine which is not accessible and has long lain in a dismantled state is one of Brazil's 12 Boeing SB-17Gs.

**BELOW:** Around 100 B-25 Mitchells served the FAB between 1942 and 1974 – the museum's well-preserved B-25J 5127 joined in 1946

areas dedicated to the prolific national aircraft manufacturer Embraer and other subjects such as the FAB's Esquadrilha da Fumaça (Smoke Squadron) – one of the team's T-6s is preserved here. The display team remains active, nowadays flying the Embraer Super Tucano.

Progressing into the first of the long line of interconnected hangars, a replica of Santos Dumont's 14-Bis will be found, along with a series of biplanes telling the story of Brazilian aviation in its first few decades. These include a rare Muniz M-7, the first type to be made in Brazil after Santos Dumont's aeroplane, with 28 built from 1935, the first of these at Campo dos Afonsos.

Next to be seen is an impressive display of World War Two-era aircraft, a pair of Republic P-47 Thunderbolts, a Curtiss P-40 and a North American B-25. Brazil entered the war in August 1942 after German submarines sank several of its merchant ships as they progressed across the Atlantic.

Força Aérea Brasileira aircrews had already begun training with US personnel and conducting anti-submarine flights off the

coast of Brazil. By the end of 1944, this important mission became the sole responsibility of FAB aircrews flying US-supplied equipment. From the autumn of 1944 to the end of the war, an all-volunteer group of 48 Brazilian fighter pilots flew as a squadron attached to the USAAF's 350th Fighter Group, 12th Air Force, in Italy. Designated the 1º Grupo de Aviação de Caça (1º GAC), these P-47 Thunderbolt pilots amassed an impressive combat record.

The remainder of the wide range of aircraft on show take the visitor into the jet age and all the







**ABOVE:** A selection of biplanes used for pilot training in Brazil, many at the co-located Military Aviation School at Campo dos Afonsos

**RIGHT:** C-10A Canso 6527 was originally the RCAF's 9752, supplied to Brazil in 1949 and operated until 1982 when it was retired to the museum

**RIGHT:** Originally 45-49151, this is F-47D 4184 which served from 1953 and was restored to flight by 1996. It represents an aircraft used in Italy under attachment to the USAAF

The Flying Fortress variants were used in the search and rescue role. They were obtained from US stocks in 1953 so that obligations under the Chicago Convention to maintain long-range rescue, search and reconnaissance units within its area of responsibility could be met. One other is still in existence, smartly displayed in its search and rescue livery outside its former base at Recife, in Brazil's northeastern state of Pernambuco.

### Heading outdoors

In early 2018 several of the larger aircraft were moved outside in order to facilitate repairs to the hangar roofing after it was severely damaged in a storm. These have left some gaps in the interior line-ups, but their presence outside does mean that photographic opportunities are much improved, notably of the superb Vickers 700 Viscount. The latter was one of two employed by the FAB, designated VC-90, on VIP and presidential duties (the other crashed in 1967).

At present the Viscount stands outside in a group on the airbase,

away from the publicly accessible museum area, along with the collection's Hawker Siddeley HS 748, Boeing 737, and Fairchild C-119 Flying Boxcar. In more recent times they've been joined by the last Varig-operated Lockheed L-188 Electra, which proved very challenging to extract from its tight hangar space. The four-engined airliner joined the museum in 1992 after the Electra fleet was retired following three decades of service on the Rio to São Paulo airbridge.

Nearby is the attraction's Lockheed P2V-5 Neptune, and closer to the museum buildings stands a Lockheed C-130 Hercules, de Havilland Canada DHC-5 Buffalo along with several smaller exhibits. These include a Morane-Saulnier MS.760 Paris jet trainer, the prototype EMB.110 Bandeirante, and a pair of Learjets. There is even a version of the formidable Mil Mi-35 gunship helicopter with Israeli avionics – the Mi-35 was the export version of the

Russian Mi-24, and known as the AH-2 Sabre in Brazilian hands.

Since museum personnel began the process of removing certain aircraft from the hangars for repairs, there have been several changes among those stored outside. Further switching can be expected until the roof work is finally completed.

Given its vast depth of subject matter and sheer variety of aircraft, large and small, there can be no doubt that the Musal brings together one of the finest aviation collections in the world. While it is not possible to view all of the rare aircraft in the museum's possession at any one time, those that *are* on show make a Musal visit an absolute must for the serious aviation enthusiast. In fact, for those sufficiently devoted to the hobby, it perhaps even justifies a trip to Brazil in itself! ●

*Thanks to Carlos Motta, Vito Cedrini, Vicente Forlenza, Bruno Anjos and Brigadeiro Reginaldo Pontirolli of ASPAER*







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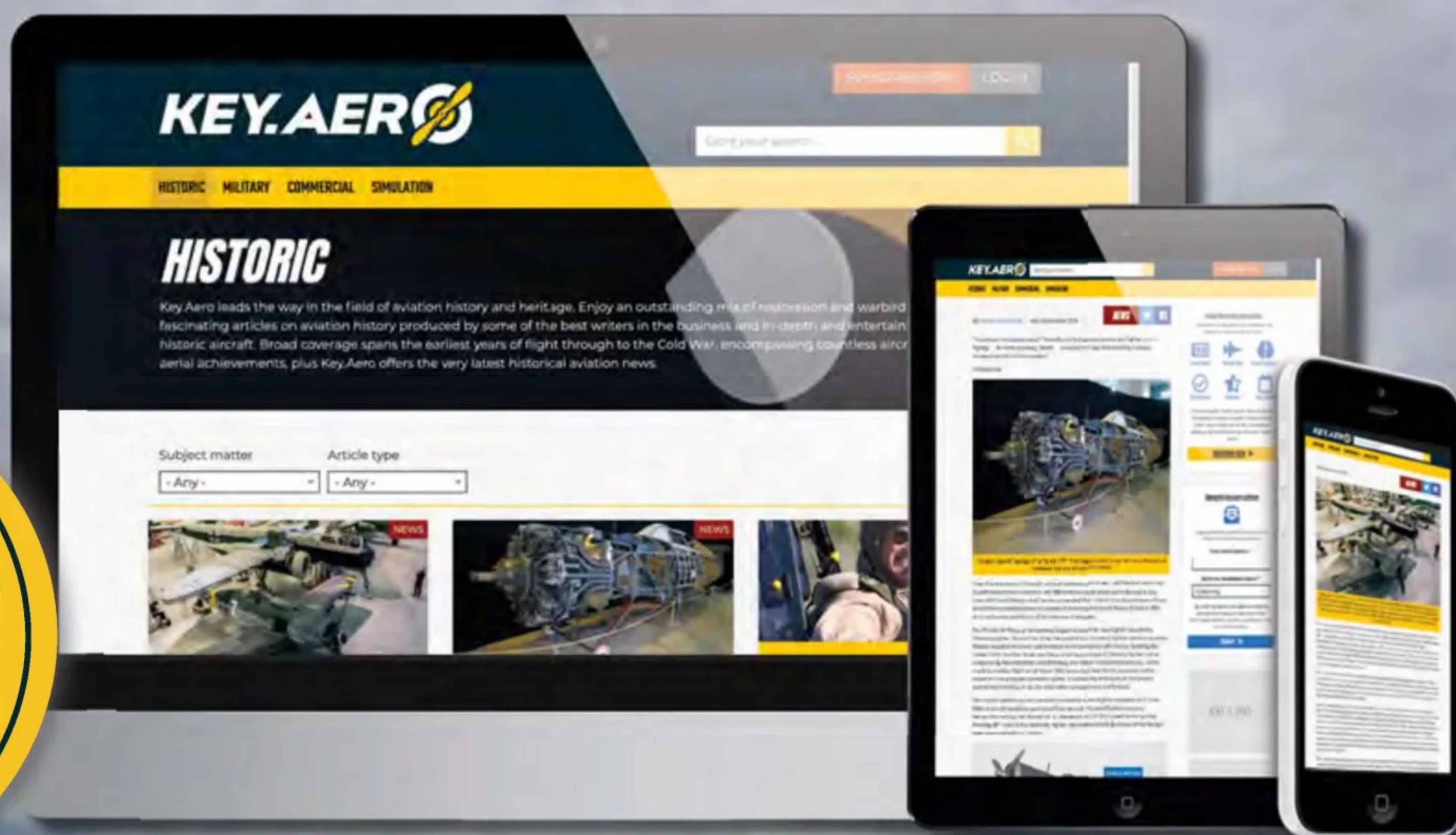
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*FlyPast* (ISSN 0262-6950), is published monthly by Key Publishing Ltd, PO Box 100, Stamford, Lincs, UK PE9 1XQ. Airfreight and mailing in the USA by agent named World Container INC 150-15, 183rd St, Jamaica, NY 11413, USA. Periodicals Postage Paid at Brooklyn, NY 11256

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